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REPORT

OF THE

DEPARTMENT OF MINES,

BY THE

COMMISSIONER OF PUBLIC WORKS AND MINES

FOR THE

PROVINCE OF NOVA SCOTIA,

FOR THE YEAR 1872.

HALIFAX, N. S.:

PRINTED BY THE CITIZEN PUBLISHING COMPANY.

1873.

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REPORT.

MINES DEPARTMENT,
Halifax, February 26th, 1873.

SIR,—I have the honor to submit for the information of His Honor the Lieutenant Governor, the Annual Report for the year 1872, respecting the Mines of this Province.

It is gratifying to be enable to report a large increase in the coal trade during the past year, resulting from the reduction of duty on coal in the United States, and the advance in price of iron and coal in Great Britain. There has also been an increased demand at Halifax for coal for steam ships, arising from the same causes. In several markets hitherto altogether supplied from Great Britain, Nova Scotia coal now sells readily at remunerative prices.

In the year 1871, 595,418 tons of coal were sold, in the year 1872, 785,914, being an increase of 189,496 tons, the details of which are shown by the usual statistical tables hereto annexed, to which attention is invited.

From the nature of the returns hereto made to the Department by the Coal Mining Companies, it is not possible to ascertain the countries to which our coal is exported, or the respective quantities shipped to each, but in future they will furnish this desirable information.

Explorations for coal have been made in the Spring Hill region, Cumberland County, by the Exploration Company, Messrs. McFarlane, Livesey and others, proving beyond doubt, that on completion of the projected railways, it

will become one of the most important mining districts in the Province.

Although the yield of gold per ton of quartz crushed, and the average earning per man employed in gold mining are larger than that of last year, yet there has been a decrease in the aggregate amount of gold obtained, in the number of men employed, and in the number of mines worked this year. This decrease is principally owing to the high price and scarcity of labor, and to other causes mentioned in the Report of the Inspector of Mines, which it is unnecessary here to recapitulate. Gold mining during the past year has been chiefly confined to mines previously opened. A mine was opened at Harrigan Cove, and another at Shear's Point, both in the eastern part of Halifax County. The first mentioned is owned by Mr. Samuel Smith, who has placed a crusher of eight stamps and other appliances on the ground, and is working his mine vigorously. From the appearance of many lodes exposed by a large amount of cross cutting and the returns from the crusher since December, it is expected that it will prove remunerative. The mine at Shear's Point has not been so fully prospected, but some quartz from it crushed at Mr. Smith's mill has yielded a good return. These are the only gold mines opened in new districts during the year.

The same causes that have given an impetus to the coal trade have brought our iron ores into notice. Numerous licenses with the object of searching for iron ore have been issued, and extensive explorations have been made, in some instances successfully.

In licenses to search and work issued by this department, the right is granted to search for, and work all mines and minerals other than gold; in the leases, there is only granted the right to mine for one stated mineral. In some of the areas granted under lease to mine for coal

is found an argillacious iron ore, which ore the holders of the coal mining lease have no right to mine, and for which right applications have been made by others than the coal mining lessees, if it should be considered advisable to lease such situated iron mines, there will be some legislation required to secure the interests of the present lessees and to prevent collision.

From the circumstances that the above-named ores are found in beds conformably interstratified with the beds of coal I think it would be advisable not to grant separate leases, but to give the right to mine the iron to the holders of the lease to mine for coal on such terms and conditions as may seem nesessary.

The act entitled "An Act to Consolidate the Statutes relating to Mines and Minerals," passed the fourteenth day of June, 1869, contains many ambiguities and inconsistencies, and demands amendment in many particulars. This act and the acts passed in amendment being the whole law in force in this Province relative to Mines and Minerals, are almost wholly confined to the management of mining titles, returns and collection of rents and royalties. An act is urgently required similar to that enacted in Great Britain in 1872 for securing the skilful and economic working of mines, and making it imperative that all practicable precaution be adopted to prevent accident to the employees.

It was discovered through surveys made for railways and other purposes that the maps of Cumberland County, used in connection with the Mines Department, were incorrect. A large tract of country between Spring Hill and the Joggin's is leased or covered by licenses to search and work, the boundary lines being based on three or four starting points, and to prevent confnsion and future dispute, it was deemed proper that these points should be correctly fixed. Professor Hind, at the instance of the Government, undertook to

have the necessary surveys made, and had them completed by John Oram, Esq., Professor of Mathematics of King's College. Professor Hind's Report has been printed. A correct map of the locality has been made, showing the required points on which will be marked the areas under lease or license. There is now a difficulty in ascertaining the boundaries of mining areas, in consequence of the courses in all surveys having been given according to the magnetic meridian. True meridian lines have never been set up in this Province. All surveys of Crown Lands and Mining areas have been made by the magnet, and consequently when a corner mark is destroyed or lost, it is almost impossible to find the exact point again. Illustrative of this, Professor Hind states that he found a tree marked as the starting point for the survey of the General Mining Association's area at Spring Hill, but at the corners several different bounds were shown made by different surveyors, who had attempted to run the lines of the area beginning at this tree. As this area has been made the basis for the description of the surrounding ones, this variation of courses may cause difficulty. I would suggest that true meridian base lines be set up, at least, near the principal mining centres, so that surveyors can test the variation of their instruments on making surveys. This should be followed by a survey of the lines of all areas under license to work or lease, as soon as convenient, and the courses taken on the basis of the true meridian. Such a survey is difficult even now, but it will become more difficult to accomplish, the longer it is left undone.

The increased activity in the coal trade created a corresponding demand for labor, which this Province could not supply, and in consequence wages became higher, and ships engaged in exporting coal were unduly detained. Unless a sufficiency of miners be obtained the opportunities now offered for securing permanently the markets lately opened to us, will be greatly lessened.

The usual report of the Inspector of Mines is subjoined, and contains besides the customary information on the general condition of the Gold and Coal Mines, several suggestions by him, deemed worthy of serious consideration, to which I beg to call attention.

Dr. Honeyman continues to make additions to the geological and mineralogical collections in the Provincial Museum. Under his able management this institution is becoming more useful and interesting. His report appended gives a detailed description of these additions and other interesting information.

I cannot close this report without paying a tribute of respect to the memory of my predecessor, the late Honorable William Garvie, a gentleman who was as much admired for his talents and accomplishments, as he was esteemed for his moral worth. His death has deprived us of one of our most promising public men, and his premature decease is deeply regretted by all Nova Scotians.

DANIEL MACDONALD.

To the Hon. W. B. Vail,
Provincial Secretary.

REPORT

ON THE

INSPECTION OF MINES,

UNDER LEASE FROM THE CROWN

IN THE

Province of Nova Scotia,

FOR THE YEAR ENDED 31ST DECEMBER, 1872,—BY HENRY S. POOLE, ESQ., F. G. S,; ASSOCIATE OF THE ROYAL SCHOOL OF MINES.

HALIFAX, N.S., February 15th, 1873.

SIR,—I have the honor to transmit, as Inspector of Mines, to which position I was appointed in August last, the accompanying report on the mines of the Province for the past year; and do so with more pleasure at a time, which promises to be the beginning of a new era in the history of the coal trade.

The mining record for the last six years tells of one unbroken series of efforts, on the part of the mine owners to contend against low prices and an irregular demand consequent upon the close competition which has hitherto existed for the trade of a limited market.

On looking over the yearly reports from the Directors of the different Corporations, it may be seen that during that period not a single Concern has paid a fair dividend on the capital expended. While many have merely paid working expenses, some have been even worked at a considerable loss. The endeavor having been either to force a trade, or to keep the mines open, until the better times, yearly expected, would come.

The increased demand has come, but not altogether from the quarter expected. Ever since the trade languished, on the abrogation of the reciprocity treaty with the United States, the operators have looked for a reduction of the heavy duty, which was then imposed on all bituminous coal imported into that country, as the means of restoring to them a profitable market for their coal. To some extent their hopes from this source have been realized. The United States' new tariff bill, which came into force August 1st, 1872, declares that the duty shall be :—

"On all bituminous coal and shale, seventy-five cents per ton of twenty-eight bushels, 80 lbs. to the bushel.

"On all slack coal or culm, such as will pass through a half inch screen, forty cents per ton, 80 lbs. to the bushel."

Yet, the quantity shipped during the year to the United States, has not been as much as might have been expected from a review of the increase that has yearly taken place, notwithstanding the late prohibitory duty.

The unlimited market, which has been so unexpectedly opened to Nova Scotia, is in a great measure due to the state of the trade in Great Britain. While the British exports for the year 1872 have risen from 12,747,989 tons to 13,211,961 tons or by 4 per cent. ; their value has increased from £6,246,133 to £10,443,920 or by more than 66 per cent. This rise in value has permitted our shippers to compete in markets on this continent from which, by low prices, they were hitherto excluded, and it has shewn that the prosperity of our trade is not altogether dependent, as was generally supposed, on the markets of the Republic.

Yet while it is satisfactory to know this, it should not be forgotten, that this country, is as much interested in the total withdrawal of the American import duty, as are the citizens of New England, and that we look to them for our principal market, as much as they naturally do to us, for their supply of bituminous coal.

When speculating on the probable trade of the coming season, it is well to bear in mind, that, with the increased demand in the

Autumn came an increase in the rates of freight; and the profits that otherwise might reasonably have been expected to accrue to the coal owners, were absorbed in the maintenance of the shipping, that for weeks lay idly waiting their turn at the coal ports. The output from the mines falling far short of the demand, labor consequently was at a premium and wages rose 20 to 25 per cent. above the rates of the year before. In all probability, a further advance will be asked for next summer, when competition bidding for all the available labor prices may be forced to a height that will make mining no more profitable than it has been heretofore.

Wages are now such, at some of the mines, that steady men have earned over $80 per month for three months in succession; and all that they can reasonably ask, besides, is to have constant work the whole year through; the present rate of wages being the maximum that the prosperity of the trade can afford to pay. Anticipations are entertained that the business of next year will double that of the present, but there is really no ground on which such a calculation can be possibly based. The utmost capability of all the mines working under the most favorable circumstances is, I believe, not in excess of 1,100,000 tons; unless indeed a large importation of skilled labor can be speedily effected.

General Summary of the Returns of the Mineral Produce of Nova Scotia, received by the Department of Mines for 1872.

Number of Mines.	Minerals.	Quantities.	Value.
25	Coal.....tons	880,950	$1,409,520
30	Gold (17,173 tons quartz,) oz.	15,079	278,961
2	Iron.....tons	6,000?	
1	Barytes: ..... "	260	2080
1	Manganese..... "	40	1400
	Plaster..... "	99,470	89,523
	Fire clay..... "	527	

COAL Sold in the Province during the year Ended December 31st 1872.

COUNTY.	ROUND. Tons.	SLACK. Tons.	Nova Scotia Proper. Total Round. Tons.	Total Slack. Tons.	Total. Tons.
Cumberland	13.272	881			
Pictou	340,142¼	48,275¼	353,414¼	49,156¼	402,570½
			Cape Breton.		
Cape Breton	360,036	20,237½			
Inverness	2,879	191	362,915	20,428½	383,343½
	716,329¼	69,584¾	716,329¼	69,584¾	785,914

COAL MINES.

CUMBERLAND COUNTY.

The increased demand for coal, which in the Autumn gave opportunity for the display of much energy in the other coal mining counties, has not been attended by a similar result in Cumberland.

Although much attention has been drawn to Spring Hill by the opportunities for carrying on a profitable business, which the opening of the Intercolonial Railroad from Truro to Amherst afforded, as yet no active preparations have been commenced for mining in that most promising coal field.

On the areas owned by Mr. Livesey, a persistent search by boring has been conducted, but up to the present time no seam of much value has been found. The prospectors have, however, succeeded in tracing the main seam a quarter of a mile further to the westward, on the General Mining Association's property, and consequently their hopes of proving the further extension of the workable bedsto the westward, have been considerably raised. Much difficulty is met with, in proving the extent of the field, on account of the great depth of the superficial deposits, and the great expense attendant on sinking trial pits.

THE JOGGINS.

The Joggins colliery has been further developed and the facilities for an iucreased output prepared. During the year 12,291 tons were sold, an increase of 1877 tons over the preceding year's operations. The new slope has been continued to a depth of 690 feet, and the low levels from it open a new winning of 315 feet to the deep of the present water bord. At the eastern end of the workings, a mile and a quarter from the shaft, the old system of bord and

pillar has been abandoned, and a long-wall system with 40 feet faces of work has been introduced. Both divisions of the seam are worked and the intervening parting of fireclay which there is not so thick as to the westward, is thrown back into the waste. The change in the system of working has been attended by the replacing of the skids hitherto used, by tubs of moderate capacity. On the surface, preparations have also been made for an increased business. The wharf has been extended 100 feet and blocks for 200 feet have been built at right angles with the main wharf which afford additional protection to the shipping. An expenditure is returned as follows :—

Slope	$2809
Levels	2000
Surface Works	2802
Houses	200
	$7811

MACCAN.

The returns from this mine state that 118 tons have been raised during the year and that the sum of $15.00 has been expended on levels.

SCOTIA.

At this colliery mining has been on even a more reduced scale than in former years. The quantity of coal mined was 844 tons and an expenditure is shown on

Adits and Levels	$287.40

SPRING HILL.

The Spring Hill Mining Company has been formed to work the Macfarlane areas. It is expected that during the ensuing year works of a permanent character will be established. For the

present, a slope 115 feet deep worked by a horse gin yields the coal that is supplied to meet the local demand. 1000 tons have been sold. The returns show an expenditure on—

Levels	$201.13
Surface Works	365.00
Houses	500.00
Machinery	30.00
	$1096.13

On the Black areas $446.60 have been spent on prospecting.

A branch from the Intercolonial Railway about four and a quarter miles in length is now being built, which will, when complete, put the mines in communication with the markets of the numerous towns and villages on the line of the railroad from Truro to St. John.

PICTOU COUNTY.

The four active collieries in the county, were worked with vigor, up to the close of navigation, and helped in a great degree, to swell the increased total output of the country. They are now making further preparations to meet the expected greater demand of the coming season.

In the eastern and western sections of this coal field, prospecting has been conducted with renewed energy, but has as yet met with, but indifferent success. From the

ALBION MINES

98,865 tons were sold, an increase of 21,732 tons. At the Foord Pit, the only pit now being worked in the main seam, the levels to the northwest have been much extended and room made for an increased number of men. To the rise of the workings and

below a heavy barrier of coal left to dam back the water lying in the old workings, an air shaft nine feet six inches square is in course of being sunk. At the mouth of this air shaft a Guibal ventilating fan 30 feet in diameter will be erected, and also a steam engine by the aid of which the shaft now 345 feet deep will be continued 270 feet further; at which depth it is expected to reach the coal.

All the old workings to the westward in this seam are now shut off, and as heavy after damp finds its way through the cracks of the measures, and falls along the crop to the surface, in the neighborhood of the Forster Pit, in all probability fire still smoulders over an extensive portion of the workings in that district.

By some means unexplained, the after-damp suddenly found its way into the old workings of the deep seam, and in such volume, that a large district had to be walled off. In the deep seam operations have not been very extensive, but preparations have been made to greatly increase the capabilities of the Cage Pit, by extending the incline and driving levels.

Coke continues to be made of the slack from the main seam, and meets with a ready sale at remunerative prices. The returns show an expenditure as follows:—

Shaft	$4669.66
Machinery	6394.15
Houses	3208.72
	$14,272.53

ACADIA.

The regularity that in previous years characterized the working of this colliery, is again observable in this year's returns. The quantity of coal sold, 123,063 tons, exceeds the sales of the previous year, 19,056 tons, and is the largest output from any one mine in the country. The system previously pursued has been continued. The slope, having been extended 370 feet, has now a total length of 1190 feet. Another set of levels are in course of

being driven to develop the new lift. In the upper lifts the levels have been driven to the boundary, and the pillars robbed to such an extent, that the roof has crushed in over a large area of the workings. From the experience gained by working the pillars, it is expected that in future operations of a similar character, a much larger proportion of coal will be won than hitherto; especially when the robbing is conducted in a regular manner.

There has been erected, during the year, a new set of three boilers made of $\frac{3}{8}$ plate, thirty feet long and 34 inches in diameter. Also, a force pump of six in. diameter and 7 ft. stroke to replace, one having only half its capacity. An expenditure is returned as follows:—

Machinery	$7852.19
Surface Works	540.50
Houses	218.89
	$8611.58

INTERCOLONIAL.

Sold 105,545 tons; an increase of 54,058 tons over the total quantity mined during the previous year. At this colliery, the slopes have been continued to a depth of 1440 feet, developing a new lift of 451 feet, and the mine put in an efficient state for a further extension of its capacity. The driving of the slope took 47 days. A shaft 342 feet deep, in size 14 feet by 6 feet, was sunk in 132 days. It is, for the present, to be used as a downcast for the air. A stone drift has been driven through the trouble, an upthrow of twenty-five feet, that at present bounds the workings to the east, and the extension of the levels in that direction continued. On the western side of the slopes, the levels have been driven to the boundary, and a return air course has been cut up the side of the barrier rib.

A branch road two and three quarter miles long (to connect the colliery with the provincial railroad) has been constructed.

The returns show the following expenditure on

Shafts	$ 5942.69
Surface Works	443.16
Houses	2930.06
Levels	1433.26
Machinery	1795.27
Railroad	20678.76
	$33223.20

NOVA SCOTIA

Sold 60,590 tons; an increase of 48,072 tons. By perfecting the arrangements previously made, without a much further expenditure of capital, this colliery was also enabled to largely increase its business, and with the other establishments on the Acadia seam, find a ready sale for its product in the general market. The construction account is returned as follows :—

Houses	$3525.00
Surface Works	1787.00
	$5312.00

VALE.

This colliery has been planted on the McBean areas, to work the deep or 8 foot seam. Two slopes now 160 feet deep are being driven on the inclination of the seam, an angle of 30 degrees. The main slope is 16 feet wide, and the travelling way 8 feet wide. Strike of the seam N. 58° E. Mag. A pair of winding engines 12 inch cylinder and 18 inch stroke, built by the Acadia Foundry, New Glasgow, have been erected. Three plain cylindrical egg-ended boilers, 30 feet long by 38 inches in diameter, are in position, and the flues from them lead into a stack 60 feet high, 3 feet 10 inches in diameter.

Seven double houses for workmen and the necessary shops and offices are already built.

Preparations are now being made to construct a railroad, about 6 miles in length, to connect with the provincial road at New Glasgow. The expenditure stated in the returns, is as follows :—

Slope	$3568.00
Surface Works	4208.75
Machinery	4437.00
Houses	4078.00
Prospecting	66.12
	$16,357.87

On the MITCHELL and BARTON area, an adit has been driven through the measures about 300 feet, on to the extension of the same seam now being opened at the Vale colliery. The workings are as yet very limited, and the extraction small. The seam on this area is found to be 14 feet thick. The returns show an expenditure on

Adits	$249
Surface Works	135
Prospecting	17
	$401

The CROWN COAL, BRICK AND POTTERY COMPANY

have made no returns for the year. Their operations must, however, have been very small, and it is understood were chiefly in the fire-clay. The quantity of fire-clay shipped, is said to have been 40 tons to Montreal, and 29 tons to Halifax.

The Pictou Mining Company expended $453.17 on prospecting their area.

CAPE BRETON.

The collieries in this Island experiencing equally with those of Pictou County, the effect of the increased demand for their product were, during the later part of the season, worked to the utmost of their restricted capacity. Their capacity was restricted not by the want of facilities for extraction or means of transportation from the pits to the shipping wharves, but by the scarcity of manual labor at their command. Skilled workmen were not to be had, but of ordinary labor, except in the height of the season, there was sufficient.

This question of labor, will, in all probability, be the most serious of all that will engage the attention of agents anxious to profit by the expected increased trade of the present year.

In the County of Inverness, the

CHIMNEY CORNER

Colliery was alone worked. The shipments from which still remain small, through slightly in excess of the previous year. In the mine, the lowest level has been extended to a distance of 800 feet, and faces of work have been carried from it to the full rise, each about 30 feet in length, succeeding one another at a distance of 10 feet. One of Cameron's special steam pumps, No. 6, keeps the mine free from water.

It is proposed to greatly extend the breakwater, and form within the cove a shipping basin to afford greater protection for vessels against the prevailing northerly winds of Autumn. The expenditure on surface works was $50.00; and on levels, $150.00.

SYDNEY MINES.

102,691 tons sold. A decrease of 3,203 tons. This slight decrease was occasioned by the heavy snow storms in December blocking the railway and retarding the shipments. And had it not been

for the want of men the shipments would have been largely in excess.

The workings were conducted in the same systematic manner, employed for many years. More attention, however, was paid to the pillar working which was carried on upon an increased scale.

At the new winning at Loyd's Cove the sinking of the pumping shaft was continued to a depth of 266 feet when a feeder of salt water, 160 gallons per minute, was struck. The sinking was then discontinued, and the lower 32 fathoms of the shaft lined with cast iron tubbing weighing 162 tons.

The complete sinking set of 20-inch pumps, with spears, ground spears, crabs, sheaves, &c., were erected, and 29 fathoms of 3-inch plank brattice with oak buntons, guides, &c., were put in and other arrangements completed to combat with the feeder and continue the sinking. The staple shaft which stood at 140 feet was continued to a depth of 280 feet, and 25 fathoms of its depth were cased with cast-iron tubbing weighing 72 tons. In his last report Mr. Brown states that the sinking was progressing satisfactorily, and although the feeder had more than doubled in volume hopes were entertained that the water-bearing strata would shortly be pierced, and the feeder tubbed back. The returns give the following expenditure:

Shafts	$14,541.21
Surface Works	518.67
Machinery	902.68
Houses	2283,84
	$18,246.40

VICTORIA.

19,222 tons sold. The levels in the mine have been extended to the West and the lower one has reached a distance of 22 chains.

The accommodation for workmen has been increased by the

building of several blocks of double houses. In the return the expenditure is thus shown:

Levels	$9546.11
Surface Works	55.50
Machinery	158.13
Houses	5973.22
	$15,732.96

LINGAN.

38,404 tons sold. An output largely in excess of late shipments.

At the Barrasois the slopes are kept free from water but no means of shipment or transportation have yet been provided. The level under the sea has been extended about 4 chains. An expenditure is returned as follows :

Levels	$2,343.72
Surface Works	528.60
Dredging	3,621.57
	$6,493.79

GARDINER.

The crop workings have been abandoned, and a shaft 12 feet, by 9 feet is in course of being sunk, which should it is expected reach the coal at a depth of 200 feet. The upper 15 feet of the shaft have wooden walling, below, the measures are sound and require at present no lining. The position of the shaft is convenient for shipping by the International Railroad, to Sydney Harbor.

Preparations are being made to erect a powerful winding engine, build workmen's houses, shops, &c. The expenditure is stated to be :

Shafts	$9,833
Houses	7,016
Machinery	895
Surface Works	343
Railway branch	855
	$18,942

RESERVE.

This colliery is now fully equipped to work the crop coal of the Phelan seam. Two slopes, 10 feet wide, have been driven to a depth of 810 feet and levels won out on either side. A single horizontal engine, 22 inch cylinder, 3 feet 8 inch stroke, geared one to three with the following shaft, on which drums 5 feet 8 inches in diameter, are driven by friction gearing. Five boilers 30 feet long, 3 feet in diameter, of half-inch plates, well fitted, each with two safety valves, water gauges, &c., erected in an adjoining building, supply steam for the hoisting engine, machine shop, and for the steam pump at the bottom of the mine. The flues from the boilers lead into a stack 53 feethigh. A more than usual amount of attention has been given to the dwellings of the workmen; each is supplied with an out-house, a necessary adjunct for the comfort of the people, but one, unfortunately, not always so considered by the builders of mining villages. Neat picket fences surround the plots of ground set aside as gardens for each household.

The narrow guage railroad connecting the Lorway, Emery and Schooner Pond Mines with this colliery, and the shipping pier at Sydney is equipped with three of Fairlie's double engines and 200 wagons. Each wagon, 12 feet 6 inches long by 7 feet wide, is fitted with side doors and pitched floor, and has a capacity when heaped of 4 tons.

The following analysis was made by the Manhattan Gas Light Company, New York:

Charge, 2240 lbs. Time 3 h. 50 m.

Maximum yield per ton	9950 ft.
Illuminating power at 9500 ft	13.17 candles.
Coke, per ton, 38 bushels	1520 lbs.
Gas purified by one bushel lime	2380 ft.

	New York.		London.
Volatile matter	34.50		36.26
Fixed Carbon	59.50	Coke	62.74
Ash	6.00	Water	1.00
	100.00		100.00

	London.
Carbon	77.41
Hydrogen	5.47
Oxygen and Nitrogen	9.30
Sulphur	2.47
Water	1.00
Ash	4.35
	100.00

In the returns the expenditure is given :—

Levels	$9767.60
Houses	6973.65
Surface Works	6916.49
Machinery	1590.85
Prospecting	96.40
	$25,344.99

LORWAY.

A shaft 66 feet deep, 11 feet by 9 feet, and divided by a brattice, has been sunk to work the crop coal until the pair of pits now in course of sinking have developed the seam. A single horizontal engine 14 inch cylinder two foot stroke, geared one to three with drums five and a half feet in diameter is used for hoisting. Two boilers of the same construction as those at the Reserve supply the steam. The pit frame is 45 feet high and the pulleys 7½ feet in diameter.

The sinking of the permanent pits gets on but slowly as there is a great deal of water to contend against. The pumping shaft is now down 110 feet. Two portable engines of 10 and 16 horse power are in use for hoisting and supplying steam for two steam pumps 7 inch cylinder and 12 inch stroke.

The construction account is returned as follows :—

Shafts	$14,459.90
Levels	5145.52
Surface Works	8159.80
Machinery	11,347.17
Houses	17,688.02
Prospecting	794.45
	$57,594.86

INTERNATIONAL.

Operations were suspended at this colliery at the close of the previous year and were not resumed until September. The business in consequence was much below that of the preceding year. An additional engine has been connected with the single horizontal engine hitherto used for hoisting, but in other respects the arrangements have not been changed. The preparations made in the previous year to increase and regulate the supply of fresh air passing through the workings have not been carried out; and should it be considered desirable to work the mine extensively and uninterruptedly during the ensuing summer a furnace or fan should be forthwith built.

The following is an analysis of the coal made by the Manhattan Gas Light Company, New York, January 10th, 1871.

Maximum yield per ton	10,106 feet.
Illuminating power at 9500 feet	1703 candles.
Coke per ton	38 bushels.
Coke per ton	1440 lbs.
Gas purified by one bushel of lime	2314 feet.
Ash in coal	5.0 per cent.
Volatile matter	38.5 "
Fixed Carbon	56.5 "
	100.0

The expenditure is returned as follows:—

Shaft	$340.00
Surface Works	177.00
Machinery	3140.00
Levels	885.47
	$4542.47

GLACE BAY,

30,715 tons sold; a decrease from last year of 8,800 tons.

Hampered by the want of labor when the demand sprang up, this colliery was unable to increase its output beyond the limited

quantity stated. No changes in the method of working or in the general arrangements at the Hub have to be noticed.

The crop workings on the Harbor seam having extended so far from the Little Pit, it has been thought advisable to prepare for a new winning 500 yards to the deep, and the sinking of two shafts about 100 feet apart has been begun. The pumping shaft, 10 feet in diameter, is walled with stone three and a half feet thick to a depth of 19 feet. The "Sterling" to be used as a hoisting shaft is similarly walled and is 10½ feet by 11 feet. The coal is expected to be struck at a depth of 230 feet. The Hub seam is so easily wrought that the average quantity of coal cut per man per day is 6·5 cubic yards. An average unusually high, and, I believe, not surpassed by the cutters in the thick seams of Pictou County. The expenditure stated in the returns is as follows:

Shafts	$3207.50
Levels	225.66
Surface Works	272.75
Machinery	819.17
Houses	1260.71
Railroad	529.00
Piers	703.38
	7018.17

CALEDONIA.

44,186 tons sold; an increase of 19,531 tons.

Shipping from this colliery was steadily pursued for nearly the whole season, and although the daily yield was small the sum total amounted to considerably more than in any previous year. In the mine, the levels have been extended and more rooms broken off from them. A headway has been driven to the crop which is to be used as an intake for the air during cold weather, so as to relieve the pumping shaft and keep it free from ice. The lodgment has been enlarged, and has now a capacity of three or four day's water.

The pit-tubs have been fitted with end doors to save breakage of the coal.

At Port Caledonia the water has been deepened by dredging, and vessels drawing 17 feet have been loaded.

The returns show an expenditure of $1,479 on levels, and $1,500 on houses.

CLYDE.

2,606 tons sold.—Late in the Summer arrangments were made by which the product of this colliery might be shipped at Port Caledonia. A railway about half a mile in length was constructed and a shipping berth erected. The establishment, the returns stated, was put in order by an expenditure on

Shafts	$204.50
Levels	128.00
Surface Works	1051.50
Machinery	550.00
Railway	8020.50
	$9954.50

SCHOONER POND.

This colliery, connected with Sydney Harbor by a branch of the Glasgow and Cape Breton Railway, is in course of development.

The following are analyses of the coal made at the Royal School of Mines, London;

Carbon	78.10.	Volatile matter	35.43
Hydrogen	5,48.	Coke	61.90
Oxygen, &c / Nitrogen	7.81.	Water	2.67
Sulphur	2.49.		100.00
Water	2.67.		
Ash	3.45.		
	100.00		

A slope 10 feet wide with side slopes 6 feet wide are being driven to the deep. Nine blocks of workmen's houses, the necessary workshops, offices, and requisite hoisting and pumping machinery are being built and erected at an expenditure for the year; the returns state on

Slopes	$7,615.60
Surface Works	1,859.72
Houses	22,946.14
Machinery	4,112.91
	$36,534.37

BLOCKHOUSE.

42,748 tons sold.—Active operations were resumed during the Summer at this mine, and a fair amount of business transacted. The operations were of the ordinary character with this important addition that pillar working, in two districts of the pit, was commenced and so far conducted with success. As a large area of the seam now stands in pillars the immediate further extension of this class of work should be seriously considered.

The shipping wharf has been strengthened at an expense of $3,000.

GOWRIE.

46,602 tons sold; an increase of 4,171 tons.

A new shaft has been sunk three quarters of a mile from the Odiorne pit, on to the extension of the North-west levels. It is to be used as a hoisting shaft and is 12 feet in diameter, lined with wooden cribbing to the depth of 24 feet.

Before sinking was commenced a borehole to carry of the water was put down by the aid of a portable engine and a manilla rope used in place of the ordinary hand-rods. The Breakwater has been further extended and is now 1,430 feet in length. The total cost

of the structure, it is stated, has been $90,000. The construction account has been returned as follows:

Shaft	$2,610
Boring	450
Levels	270
Surface Works	235
Machinery	450
Houses	350
Breakwater	2,020
	6,385

SOUTH HEAD.

1859 tons sold. The resumption of work in the mine was undertaken late in the year, but the temporary character of the loading wharf preventing shipments being made, necessitated a further suspension.

GOLD MINES.

Since the last report was written a complete change has taken place in the system of working the gold mines, and with the change there has been a great falling off in the number of men engaged, and a consequent decrease in the yield of gold. The change referred to, is the almost total discontinuance from operating by companies and the introduction of the system of working the mines by tribute.

Two or more practical working miners agree among themselves to take a mine, often one that an agent for a Company has failed to work at a profit, for a term of six months or a year, with the understanding that they pay to the owners a percentage of the value of the gold extracted. They then venture their time and money in the speculation. Trusting by honesty, economy and by faithful working not only to make fair day's wages but also earn a return on their capital, time, adventured.

The "tribute system" has become with but one or two exceptions general in all the districts, and although it is attended by some disadvantages, it promises to lead to excellent results.

Already it is shown that some of the leads abandoned by Companies can, in the hands of tributers working even under many difficulties, be wrought with profit and advantage.

The great objection to tributing, as now conducted, is the desultory method it introduces. The backs of the leads are stripped and the trenches thus made become reservoirs for water. No more timber than is absolutely necessary for the

immediate safety of the mine is as a rule used, and in districts where the country rock is fissile, a crushing in of the walls sooner or later takes place.

Much has been written on the general want of method attending Gold mining in Nova Scotia and sweeping condemnations of the management and want of skill shown while working the mines have been published. Much doubtless most justly, and yet, somewhat hasty comparisons would seem to have been drawn between the wide and comparatively easily wrought leads of other districts and the thin leads of this Province enclosed in hard and tough country rocks.

The great expense attendant on the mining of the quartz has had as much if not more to do with the failures that have hitherto, with but few exceptions followed all ventures in the gold fields.

No manner of doubt, however, can be entertained that the treatment of the quartz after extraction is still crude and imperfect, and the results obtained in our mills are far behind those of other countries.

Professor Hind in his late report on the Renfrew, Oldham and Waverley Districts has ably treated on these causes of failure, and has shown the practise of Colorado, California and Australia. His report should be read, and read with care, by all who are interested in the gold mines. I wish to add merely as a foot-note to his remarks that the invariable experience on the Pacific slope has been, "that the best mill men always have been good mechanics."

In the methods of mining, the improvements that have taken place in other parts of the world, as for example in drilling and blasting have not been here yet applied. Three men may still be seen laboriously preparing a hole for an ordinary blast, using at least an inch and a quarter drill;

while no stronger blasting material than black powder is consumed. Elsewhere small holes, single hand drills, and a powerful explosive are coming into all but general use. To introduce this system here merely requires the importation of suitable material. Our miners are fully alive to the advantages to be gained by a reduction in the cost of blasting, and seconded by their wishes on the subject, I spoke to Mr. J. Stairs who kindly undertook to make the necessary enquiries.

He informs me that Dualin made in Massachusetts costs there $1.20 per pound while Dynamite manufactured in England can be retailed here for $0 90 per pound. The English manufacturers say that an ounce of their strongest powder is equal to one pound of the best black blasting powder. The advantage of using this material is at once apparent.

"It may be stated that the great advantage accruing from the use of Dynamite consists, not in diminishing the cost of powder as an item of expense, as in diminishing the cost of using it. The difference in the cost of powder is trifling in comparison with the difference in the cost of drilling, charging, tamping, convenience in wet work, and effectiveness of blasts.

Dynamite, as a general rule, throws rock less and breaks it more, and extends its effects much deeper than ordinary blasting powder; and those who use it soon learn not to judge of a blast by first appearances. It frequently happens that a blast which seems to have had no effect, proves to have done remarkable execution in cracking and loosening the rock and preparing the way for subsequent blasts."

As the method of using dynamite is novel to our miners I have appended to this report an account of dynamite and the manner of its use, extracted from the circular of Messrs.

Bandmann, Neilson & Co., of San Francisco, the agents of Messrs. A. Nobel & Co. Having had personally some experience of the use of dynamite, I feel sanguine of the success it will meet with in our mines, and trust the next report will confirm my anticipations.

STORMONT.

Little attention has been given to mining in this district. The chief operations have been conducted on the lead worked by the United and Consolidated Mining Companies. The former company resumed work late in the Autumn, while the latter pursued mining steadily for several months and met with fair success. The shafts have been sunk to a depth of 121 feet and the ground on either side stoped to the boundary.

The Johnston's brook mine was, to a small extent, worked in the Spring.

WINE HARBOR.

The English company have continuously worked their property, and the yield for several months, from quartz taken from the Plough lead, was most encouraging. The shaft of the Plough lead is now 110 feet deep and underhand stoping, 13 feet wide, has been carried down on a length of 100 feet.

The same company are continuing the main tunnel of the old Eldorado company with the intention of unwatering the leads that intersect the country within a distance of 560 feet of the DesBarres lead. When it is completed, the main tunnel will have a total length of 1360 feet.

Mr. Sprague, the manager, erected a direct acting steam stamp, which unfortunately has not proved as successful as

was anticipated. He, however, hopes to make alterations which will greatly improve its efficiency.

The Phœnix Company, of Toronto, suspended operations early in the year, having developed the Eureka lead by two shafts, 118 feet apart, sunk to the depth of 100 feet and 24 feet, and by drifts to the east and west 55 feet and 26 feet respectively. They also worked the Charlotte lead which lies 29 feet to the rise of the Eureka, on which they sank a main shaft 110 feet deep and a shaft 70 feet to the east, 63 feet deep.

SHERBROOKE.

The property of the New York and Sherbrooke Company has been worked on tribute by Israel West, who, operating principally on the Harrison or South lead, employed on an average twenty-one men. The main shaft of the South lead is down 250 feet, and the east and west tunnels are driven to distances of 160 feet and 120 feet. The pumping and hoisting is done by steam power.

Mr. West prospected for many months the Hayden and Derby property, over which he has a tributing right, but met with very indifferent success until September, when he was fortunate enough to strike a lead, which promises very encouraging returns.

The Archibald lead on the Alexander property has been re-opened after abandonment for seven years. The old workings were found to consist of two shafts, eighty feet apart, sunk to depths of 45 feet and 35 feet.

The McLean or Little lead on the Wellington and Alexander properties which had remained unworked for eight years was re-opened by tributers in September. The previous operations had been conducted to a depth of 125

feet. The mining on the Wellington lead which had been continuously carried on for a number of years past was discontinued in August, when the excavations had reached a depth of 500 feet. It was found that the machinery on the ground was insufficient for working the mine profitably at that depth, and the owners not deeming it advisable for the present to supply heavier pumps and a more powerful engine the mine was allowed to fill with water. The tributers on the property then turned their attention to the Dewar lead and put a 9 inch pump in the west shaft which had previously been sunk to the depth of 140 feet. In connection with the 400 feet on the Dewar lead in the Wellington property, the tributers are working the 100 feet of the same lead in the Rochville property adjoining on the east.

The further continuation of the Dewar lead to the east is worked by other sets of tributers on the properties of "Rochester" and "Try Again" companies which had lain idle for many years. Each party work their section separately and distinctly from those of their neighbours, and each have one, if not two, sinking shafts from which the faces of work are carried along the stope to the boundaries. It is proposed, when the workings are in such a shape as to allow all the water to flow to the west shaft on the Wellington property, that the expense of pumping, which will then altogether fall on the adventurers on the Wellington, be proportionately borne by the several parties interested.

The Palmerston Company, one of the most energetic companies that hitherto have carried on mining operations in Sherbrooke, have ceased to operate. Their property has been let to tributers, who abandoning the workings on the Palmerston, Snow and Stryker leads, opened a new lead they discovered 18 feet to the south of the Snow lead. On this lead they sank two shafts, 53 feet apart, to a depth of

40 feet, and stoped the intermediate ground. From the lead, 14 inches wide, they took 78 tons of quartz which yielded 60 oz. of gold. Encouraged by such a promising return, they removed the machinery that had been in use on the Palmerston lead and applied it to the further development of the new lead.

The Meridian Company, after working the Stryker lead for the greater part of the year, suspended their operations on it, to prospect for the new lead discovered by the tributers on the Palmerston property.

On the Cleverdon property, the British Company have been also prospecting for the continuation of the same lead.

The Hamilton Company sank a shaft 80 feet deep on a small lead 150 feet to the north of the Ferguson lead which they had previously abandoned, but finding the lead too small to pay expenses, they have suspended all work. Operations have altogether ceased on the property of the Caledonia Company.

HARRIGAN COVE.

This new district is situated about three miles to the westward of Mosher's River ferry, and about half a mile back in the woods from the main shore road. Attention was drawn some years ago to this locality by a large boulder of quartz full of sights being found on the surface. It has been prospected in a very systematic manner and a belt of numerous ledges some 20 inches wide has been exposed. From the croppings of such leads as have been stripped, many specimens have been broken which show both fine and course gold. In the Galena belt many small pockets of iron pyrites held together by threads of gold, have been found. Mr. Smith, who controls most of the areas prospected, has erected a small mill, but it had hardly been started before severe weather put a stop to all operations.

The general course of the leads is N. 68° W. Mag.

Prospecting has been also made near the road about half way between Harrigan Cove and Mosher's River.

TANGIER.

The property of the Burlington Company was, in the early part of the year, let to tributers, who worked a little on the Leary and South Lake leads, and also prospected for the Big South lead, which they proved on the property. Subsequently all work was suspended.

Operations have been resumed on the oldest location in the Province, after a suspension of seven years. Mr. Forrest, as a tributer, has been working the areas of the Tangier Mining Company, and has stoped the Little South lead 300 feet in length to a depth of 25 feet.

On Froud's property but little was done on the Hill lead while work was steadily prosecuted, though on a small scale, on the Dunbrack lead, which was opened on a length of 160 feet to to a depth of 50 feet.

The Strawberry Hill Company, having bought the Forrest or Confederate property worked both together for a short time in the early part of the year; but finding the quantity of water to be drawn was so great that it required two horse gins, working night and day, to keep the mine free, they abandoned the mines until late in the Autumn, when the required pumping machinery was erected.

No other work of any moment was done during the year in this district.

MOOSELAND.

Mr. J. Irving has since June been steadly working on tribute the mines of the Humber Gold Mining Company. He has stoped along the Irving lead above the water level over a length of 180 feet, reopened the Furnace lead and sunk the shaft on it 20 feet additional, and has erected a water wheel to do the pumping at the eastern end of the Irving belt of leads.

LAWRENCETOWN.

Operations were not resumed in this district until September when some tributers took hold of the Waddelow Lead which had lain idle for three years, and satisfied with the prospects made preparations to work it steadily during the coming winter.

MONTAGU.

DeWolf & Co. have been working on a property that contains the old Fisher lead or the North lead as it is now known. This lead they opened on a length of 100 feet by three shafts to a depth of 25 feet and found it about 14 inches in thickness. They also opened the South lead by two shafts 60 feet apart, and found it composed of two leads 8 inches and 22 inches thick separated by about a foot of slate. They have erected a mill of 8 stamps close to their mines.

Some tributers in the Spring worked on the St. Patrick lead on the Montagu Company's property, but as they did not sufficiently secure the hanging wall at the bottom of the mine, where the lead flattens considerably, it crushed upon them and the men lost the fruit of their labor.

Mr. Lawson has steadily continued to work his well known mine and has sunk the main shaft to the depth of 250 feet.

His principal operations have been on the western extension of the lead; while to the east, where the lead is pinched and faulty, the workings have been of a more exploratory character. He has erected a 10 stamp mill and fitted it in a very efficient manner. The stamps weighing 550 lbs. each are run at a speed of 60 drops per minute. The auriferous pyrites, of which the mine yields a considerable quantity, is as far as possible separated by hand, to be subsequently treated. For the collection of the remainder, more intimately mixed with the quartz, and which cannot be so picked out, arrangements will shortly be made.

The Montagu Company have suspended operations.

WAVERLY.

By DeWolf & Co., mining operations have been steadily conducted on the Union lead, the working of which was resumed in the beginning of the year, when they abandoned the operations on the Brodie lead.

The American Hill Company let their property on tribute to a company of miners who have employed, altogether, some 16 men and worked continuously during the greater part of the year. The pump at present in use being unequal to command all the water made to the deep, operations were chiefly carried on by stoping the ground between the two shafts on No. 6 lead.

OLDHAM.

During the Summer months several small parties of men worked on tribute among the mines of this district. The principal operators were Messrs. Donaldson and Shaffer. The former continued working on the lead, which has principally occupied his attention of late years, and erected a vertical

boiler with engine attached, to meet the increased requirements of the mine.

The latter, Mr. Shaffer, at first operated on the Britannia lead, but having met with a fault, which a cross cut of 30 feet through country rock failed to prove, he subsequently directed his energies to the working of the McKenzie lead in which he placed a pump, 5 inches in diameter, 22 inches stroke, and drove it by power obtained from the Napier mill 1300 feet away, by means of wooden rods suspended on trestles. The extension of the McKenzie lead was worked to a small extent by Mr. Andrews.

RENFREW.

Mining in this district has been almost altogether abandoned. The Ophir and Hartford Companies have both suspended operations. On the property of the former, Mr McClure has worked the McLeod lead to a small extent on tribute. By other parties, the Peifer lead has been reopened after an abandonment of five years, and a water wheel erected to pump and hoist. The lead lies very flat not greater than an angle of 60°, and the stoping is carried on at a depth of 150 feet from the surface.

MOUNT UNIACKE.

A few tributers worked in a desultory manner among the leads on the Lake side, Montreal and Uniacke properties, stripping the surface and removing patches of ground left unstoped and easily accessible. The result of their unsystematic method of working will be to render future operations on the leads worked by them to be attended by great expense for timbering and pumping. On the Uniacke property two men, it is said, took out in the work of only a few days' quartz which yielded $800 worth of gold.

GAY'S RIVER.

The principal operations in this district have been on the areas owned by Mr. McDonald, who has driven a slope in the hill side for 270 feet, at the bottom of which, levels have been driven to the right and left for 40 and 80 feet. The conglomerate and slate have been removed by long work in places to a height of 9 feet, and the workings have been carried back from the levels toward the crop.

On the adjoining area, work was commenced in the Autumn, and a slope is in course of being driven to develope the claim in a similar manner. An 8 stamp mill has been erected.

CARIBOU.

Mining operations were conducted in this locality during the year on a more limited scale than usual.

Mr. Touquoy did not mine with as much vigor as in former years. His workings were chiefly confined to the North and South leads. On the former the west shaft was sunk 17 feet and the east 42 feet deeper, and the ground between them stoped a distance of 60 feet. From the East shaft a tunnel was driven 23 feet in length at a distance of 20 feet from the surface, and the lead there sloped to within 12 feet of the bottom of the shaft.

The South or Flat lead has been stripped in an open cutting about 100 feet in length to an average depth of 10 feet.

At the Pioneer Mine, from January to April developments were continued on the Ritchie lode which maintained its wavy horizontality within a few feet from the surface; and a space of 30 by 52

eet was stoped from its eastern extension without discovering any inclination to dip. Its thickness varied from 3 to 14 inches.

On the main lode a new shaft was sunk 20 feet and fitted with a pump connected by flat rods with the driving gear in the mill. An elevated tram road from this shaft to the mill was begun, a substantial shaft house built, and much of the machinery in the mill renewed.

Operations were wholly suspended from the latter part of April until the middle of November, when the property was let on tribute to Mr. Touquoy.

During the months of November and December about 400 feet of trenches were cut in search of new and in examining already known leads, and the pump was removed from the intended main shaft to the so-called Lake shaft 160 feet further east.

On the Free Claim lead Messrs. Jennings and Wilson sank the west shaft 20 feet deeper and the east shaft 30 feet deeper or to an even and total depth of 53 feet.

The Taylor lode has been stoped to a further length of 50 feet and to an average depth of 10 feet.

At the Irving and Miller mine 3 open cuttings were made. The whole amounting to about 60 feet in length, and to an average depth of about 8 feet.

The rest of the work done in other sections of the country was merely of an exploratory character.

AFTER TREATMENT OF TAILINGS.

The only district where the washing of tailings has been conducted is Sherbrooke, where Mr. Twist has successfully treated the refuse from the Palmerston mill. He first tried

a buddle, but the results were not satisfactory. He then erected three parallel tables 8 feet long, 2 feet wide covered by seven copper plates each terminated by a riffle.

The tailings, first well mixed with a small quantity of water, are passed through a revolving screen of one eighth inch mesh and the coarse material separated. The fine then flows over the tables, on the two upper plates of which numerous small jets of water impinge to stir up the sand and keep it from settling.

From 675 tons washed, 41 ounces of gold were extracted; a saving of nearly three quarters of a pennyweight per ton. More than enough mercury required to amalgamate the copper plates was recovered from the tailings, and during ten weeks operations 70 lbs. weight were saved.

Mr. Twist, encouraged by the success attending his operations, hopes, next season, by lengthening the tables and making other alterations, to effect a further saving of the gold in the tailings.

IRON MINES.

Consequent on the great rise in the price of iron the deposits of ore in this country have received a good deal of attention. Numerous licenses to search have been taken out in the neighborhood of Whycocomagh, Cape Breton, and the hill section of Pictou County.

At Whycocomagh the iron ore is found in slates probably of Silurian age. One vein about 4 feet 6 inches thick has been opened not far from the waters of the Bras D'Or Lake, and convenient for shipment. The ore has an earthly appearance but analyses of average samples have given, it is stated, 65 per cent. of metallic iron.

ANALYSIS OF IRON ORE FROM THE INDIAN RESERVE, BY DR. HAYES, OF BOSTON.

Pure Iron	60.90
Oxygen	23.30
Sulphur	11
Alumena	1.40
Lime	1.85
Magnesia	1.64
Silica	10.80
	100.00

Many licenses were taken out in the vicinity of Springville on the East river of Pictou County, and prospecting and explorations carried on with vigor, but no reports of such explorations have been received by this Department. The general neglect to comply with the requirements of section 90 of the Mines and Minerals Act is greatly to be regretted. Much information acquired by explorations which might annually be recorded is thus lost, and can only be regained at a further sacrifice of much time and money.

From personal observation I noticed that most of the exploring was on veins of red hematite and the specular variety; the veins of red hematite presenting the most promising appearances. Near Webster's, on McLellan's Mountain, a vein varying in thickness from 8 to 40 feet has been proved by Mr. Donald Fraser to extend for some two miles and a half; the country rock being a soft slate and the gange of the vein silex.

Fresh discoveries of limonite are reported to have been made not far from Glengary R. R. station, but the locality has not been clearly defined.

The only mines actually in operation are those at Clementsport and Londonderry.

The POTTER mine the property of the Annapolis Iron Mining Company at Clementsport, neglected for several years, was reopened during the summer under the management of Mr. A. Conant. During the ten weeks that the mine was worked about 1000 tons were extracted and employment given on an average to 15 men. Of the quantity mined, 600 tons were smelted in the furnace on the ground and a yield of 163 tons of pig iron was obtained and shipped to Boston.

The yield of metal from the furnace was much smaller than analysis of the ore warrants; and future runs in charge of reliable furnacemen will doubtless be more successful. Preparations are in progress to establish the mines and iron works on a permanent basis, and during the coming season large quantities of raw ore probably will be exported for reduction in the furnaces of Pennsylvania.

LONDONDERRY.

I am indebted to the courtesy of Mr. Livesey the resident director, for facilities afforded me of examining the property and works of the Intercolonial Iron and Steel Company. Numerous excavations made along the outcropping of the vein, which has been traced for 12 miles in a direct line, have proved the existence of a series of valuable deposits of ore, but the principal mining is on a portion of the vein about two miles from the works, where an

adit lately driven 240 feet below the back of the vein intersects a body of ore as extensive as any cut nearer the surface. Hence the supposition hitherto generally held that this vein was similar in character to the "gash veins" of Missouri would seem to be incorrect, and the probabilities are that the vein carries productive ore to depths which will not be reached for many years to come.

The difficulties connected with the transportation of supplies which have hitherto greatly retarded the growth of the iron business at Londonderry having been in a measure removed by the opening of the Intercolonial railroad, the development of this important industry may now be expected to progress with rapid strides.

ACCIDENTS.

It is to be regretted that the number of fatal accidents at the collieries considerably exceeds those of the two previous years. An excess over late years was certainly to be expected on account of the increase of business; yet the proportion is greater to the amount of work and number of persons employed than the average in the collieries of Great Britain.

	Gt. Britain. 1871.	Nova Scotia. 1872.
Number of persons employed.....	370,881	3522
Quantity of coal raised.....	117,439,251	880,950
Lives lost by the accidents.....	1,075	13
Persons employed per lives lost...	345	271
Tons of coal raised per life lost....	109,246	67,765

The high average of this years fatalities cannot be accounted for on the ground that the coal mines of the Province are peculiarly dangerous. With but few exceptions the roofs over the seams are sound and require little or no timber while the seams themselves can generally be wrought with perfect safety.

It would seem rather to be due—if all the reports can be accepted as correct—to the rashness or ignorance of consequences on the part of individual miners. Consequently little blame can be indirectly charged to the mine managers; yet a feeling of something more than regret seems to be expressed in the reluctance shown by some to report accidents which have happened in mines under their superintendence.

Plausible excuses are always to be found when accidents do occur, nevertheless a more strict surveillance (by those in charge) has elsewhere been attended by a sensible decrease in the ratio of deaths to tonnage, and doubtless if attended to here would also be followed by the same happy results.

In Great Britain since the commencement of the inspection twenty years ago the proportion of deaths to the number employed has decreased from 1 in 219 persons to 1 in 345 persons.

A stricter discipline and a more general observance of regulations would be advantageous in some of the mines. It would at least be well if mine managers and overmen made it a more general rule to caution every new hand who goes under-ground and especially those who have not served an apprenticeship in mines, of the dangers that are particularly to be guarded against in the pits under their charge.

It will be noticed on referring to the table that besides fatal accidents several very serious ones happened which in their consequences are almost as disastrous as though they had been fatal. Men have been maimed for life, and the burden of their future maintenance thrown on their relations and friends. This part of the list, full as it is, I have every reason to believe, is incomplete, and that the report of several casualities has been withheld.

The following tables state the accidents reported and shows the number of deaths that have resulted from them.

TABLE OF ACCIDENTS.

No.	Date.	Name.	Mine.	Cause.	Extent.
1	March 23.....	Niel Fergusson	Sydney.....	Explosion of gas.....	Slightly burnt.
2	" 26.....	Norman McIver.....	Victoria.....	Fall of roof coal.....	Fatal.
3	April 10.....	Angus McCormack.....	Sydney.....	Fall of stone	Fatal.
4	" 17.....	Wm. Sumners.....	"	Fall-down shaft.....	Fatal.
5	" 18.....	James Haley.....	Nova Scotia....	Fall of coal.....	Leg broken.
6	May 27.....	Wm. Hamilton.....	Intercolonial....	Knocked off train of tubs..	" "
7	" "	John McInnes.....	Acadia.....	Fall of Coal.....	Fatal
8	June 5.....	Angus Boyd.....	Meridian (gold)...	Fall-down shaft.....	Fatal
9	" 12	James Bonner	Sydney.....	Fall of stone.....	Severely cut.
10	" 13	Angus Morrison.....	"	Fall of coal.....	Seriously injured.
11	" "	John Leadbeater.....	Intercolonial....	Explosion of powder.....	Fatal.
	" "	Wm. Mirtan.....	"	" "	Severely burnt.
12	July 6.....	Donald McDonald.....	Caledonia	Fall of coal.....	Shoulder blade broken.
13	" 22.....	Archy McDonald	"	Caught by cage in shaft....	Arm broken.
14	" 24.....	Bennett McKinnon	Victoria	Explosion of gas.....	Slightly burnt.

TABLE OF ACCIDENTS.—(Continued.)

No.	Date.	Name.	Mine.	Cause.	Extent.
15	Sept. 6	Edward Winter	Victoria	Fall of coal	Fatal.
16	" 11	Malcolm Morrison	Sydney	Fall of coal	Ribs broken.
17	" 13	James Lammond	"	Fall of stone	Fatal.
18	" 24	Niel McDonald	Reserve	Crushed by wagons	Severely injured.
19	Oct. 7	William Skelley	Intercolonial	Explosion of gas	Very seriously burnt,
	" "	D. Campbell	"	" "	Fatal.
	" "	Alexander Finlay	"	" "	Severely burnt.
20	" 15	Anthony McDougall	Lorway	Crushed by cage	Fatal.
21	" 20	Charles Carmichael	Gowrie	Crushed by machinery	Fatal.
22	Nov. 7	James Reeves	Acadia	Fall of coal	Fatal.
23	" 16	Alexander Cameron	Intercolonial	Explosion of gas	Slightly burnt.
24	" 18	Alexander Ross	"	Crushed by tubs	Fatal.
25	" 19	Joseph Chappell	"	Explosion of gas	Slightly burnt.
26	" 21	Allen McLean	Victoria	Fall of coal	Severely bruised,
	" "	Allen McEachren	"	" "	" "
27	Dec. 2	Angus McLean	Gowrie	Run over by wagon	Fatal

FATAL ACCIDENTS.

Explosion of gas, 1; explosion of powder, 1; falls of coal and stone, 6; accidents in shafts, 3; crushed by machinery, 1; crushed by tubs, 2; total, 14.

EXPOSIONS OF GAS.

Of the five explosions of gas reported only one was attended by fatal results.

Numbers 1, 14, 23 and 25 were caused by carelessness or inattention to orders on the part of the individual men who suffered and call for no special comment.

Number 19 was an accident of a much more serious character and was undoubtedly caused by the gross negligence of one of the party in consequence of which all were severely burnt. Without minutes of the evidence adduced at the inquest, I am unable to accurately state how the accident did occur, but from what I heard at the colliery shortly after the occurrence I understood that William Skelly, Alexander Findlay and David Campbell worked together in one bord. The two former as miners, the latter, quite a young man, as loader. On the morning of the 7th of October when they went down as usual to work they were warned by the fireman that gas had accumulated in their bord. The two miners with safety lamps in their hands went in, leaving Campbell with a naked light in the return level. They brushed the gas out as they thought and calling to Campbell came down to meet him. Just as he reached the corner, and before entering the bord, the gas fired at his lamp and all three were severely burnt. Apparently Campbell was the least injured, but he never recovered from the shock and died fifteen days afterward.

EXPOSION OF POWDER.

Accident number 11 showed a recklessness by no means uncommon in the handling of powder by miners. John Leadbeater was engaged at the Intercolonial colliery charging a hole with

powder on the 13th of June. Through negligence some powder had remained in his "skip" from the previous charging, and this falling on his naked light standing close by him on the pavement flashed, and communicated the flame with the powder in the cannister, causing it—a quantity of about 5 lbs.—to explode and injure him so severely that five days subsequently he expired. His companion, William Mirtan, was at the same time seriously burnt by the explosion but finally recovered.

FALLS OF COAL AND STONE.

Most of the casualities caused by falls of coal and stone were due to the neglect of the persons injured, to set props and sprags or remove blocks of coal and stone known to be loose and unsecured.

Accident No. 2. Norman McIver, but the moment before he was himself crushed, had warned those working with him of the danger in which they stood. He had sought for a prop with which to temporarily protect himself, but not finding one in any of the bords near, returned to take down the shaken roof coal. He commenced to do so, when a greater quantity fell than he looked for, and his life was sacrificed. Accidents will sometimes occur with the most careful men, but usually that indifference which grows on men inured to dangers is the source of most of those falling under this head.

No. 3. Angus McCormack working the pillars at the Sydney Mines, was crushed by the fall of a stump of a fossil tree, "a caldron bottom," from the roof. The fall of these blocks of stone from the "pot holes" is always sudden and their position in the roof often escapes the eye of the most experienced miner.

No. 15. Occurred at the Victoria Colliery. Edward Winter was a filler in the pit, and on the morning of the 6th September having some spare time on his hands and desirous of learning how to cut coal, went into one of the rooms where Malcolm McNeil and John Carey were at work and asked Carey for a "spell of the pick;" his request being granted he began to work at a block of coal left in the holing. He struck but a few blows before a mass of coal weighing over a ton broke away from the face and falling on him crushed

him instantly to death. The seam being highly inclined when the working face is holed and sheared, masses of coal are apt to break off suddenly especially where a "lype" runs through the coal. As McNeil and Carey left a block of coal unwrought in the holing presumably fearing some such accident, it seems to me they were greatly to blame for allowing Winter to work where he did.

September 13th—Jas. Lannand a pit driver was instantly killed by a mass of stone falling upon him from the roof, at one of the stations where the boys wait with the horses for the empty tubs going inbye. The roof is of freestone and had stood secure for two years. It was supposed to be solid but it appears there was a parting in it about 10 inches up at which point the stone separated. At the inquest on the body, one of the colliers stated that he had observed a crack coming in the stone a day or two before and told two of the driver boys to inform the deputy or overman. This they neglected to do and a fatal accident was the result.

No. 7. McInnes neglected to sound the coal still standing from his last shot before he began to wedge down a block not detached, and a mass hanging above fell on him and killed him.

No. 22. A similar case to No. 15. Reeves was working a stump of coal left in the holing when a mass of coal fell from the face and crushed him to death. Unlike Winter, he worked contrary to the advice of his partner.

ACCIDENTS IN SHAFTS.

No. 4. William Summers was a sinker at the new winning at the Sydney mines. When stepping out of a tub into the mouth of a drift which opens into the staple shaft he missed his foothold and fell to the bottom of the shaft, a distance of 22 fathoms.

No. 8. When the men where returning after dinner to their work in the Meridian (gold) mine, Sherbrooke, and were descending the shaft, Angus Boyd lost his hold and fell a distance of fifty feet, passing five men who were on the ladders below him without touching them. The deceased is said to have been subject to fits of giddiness after smoking much. A pipe was in his mouth when he fell.

No. 22. This accident was precisely similar in character to that which occurred to John Lockman two years previously at the neighboring International colliery, and was caused by the deceased Anthony McDougall, incautiously leaning over the mouth of the shaft down which he wished to call. The cage in descending struck him and he almost instantly expired.

ACCIDENT BY MACHINERY.

No. 21. Charles Carmichael was the night pumping engineer at the Gowrie colliery. On the night of the accident the water was "out" early and the engine stood for some hours. When he went to start again the engine stuck on the centre, the steam being low, and in order to get the engine off the centre he threw his weight on the fly-wheel. Incautiously he placed both feet on an arm of the fly-wheel, and the engine starting suddenly, before he was able to extricate himself he was drawn into the race and thrown violently against the wall. His injuries were such that he died almost immediately.

CRUSHED BY TUBS.

No. 24. This accident happened to a lad who had not been working long underground. He was a loader at the Intercolonial colliery, and, being at work near the foot of the slope, was called by the onsetter to help him replace a tub which was off the track. While so engaged, a coupling link in the rake of tubs broke and four of the tubs ran back, caught him, and crushed him so severely that he lived only three days. Those with him succeeded in making their escape, but he, unaccustomed to the position, failed to catch in time the meaning of their warning cries.

If the above list had included accounts of one or more accidents from *Explosions of Steam* no astonishment would have been caused in the mind of any one familiar with the condition in which steam boilers are now often kept at some of the mining establishments. A condition probably due to a false spirit of economy engendered by the slackness of trade during late years.

Boilers may be seen in use with seams and rivet holes leaking, with water running over and corroding them where they rest on

the brickwork, or with plates strained and bulged or covered with patches. In Great Britain the Mines Regulation Act under the head of General Rules states: "Every steam boiler shall be provided with a proper steam gauge and water gauge, to show respectively the pressure of steam and the height of water in the boiler, and with a proper safety valve." And these provisions are not always to be met with in this country.

As illustrations of the utter recklessness with which men will expose their lives to dangers, when the dangers, although acknowledged imminent, are familiar, invisible and temporarily doubtful, I mention two cases; both in connection with marine boilers in tug boats at Cape Breton.

One boiler, although repeatedly repaired when cracks had suddenly appeared and seams had started, was used in that condition for several years, and until early last Winter when it actually exploded, sinking the boat, but luckily killing no one.

The other, in bad order on its first arrival four years ago, was still in use at the time of my visit to Cape Breton in September. It had been repeatedly patched and repatched, and was never safe, if safe at all, except with a much lower pressure of steam than the tug boat required. It has, I have been since informed, blown a hole in its shell, and is now likely to be condemned. I was once on board the boat, when the engineer became interested in a race, and without any urging, forced the boiler to a pressure of 55lbs., or 20 lbs. beyond a pressure, that, but a short time before he had complained of as unsafe.

To lessen the danger from similar sources of accident, there is the Steamboat Inspection Act, which has only to be enforced to be of service: but land boilers are under no supervision whatever. Still, rules and regulations, if not authorized with due care, may become as dangerous as lawless recklessness. It was only last Summer that riding in the cab of a locomotive on a colliery road, I noticed with much surprise the levers of both safety valves tightly wedged down, making it utterly impossible for steam to escape at any pressure. Pointing it out to the driver, I asked the reason, as I saw the Salter balances were new and apparently in order. His reply was, "Oh! the office ordered those thimbles to

be put on the balances to let the valves blow off at 85 lbs., but finding that that pressure was not sufficient for the work to be done, and not being allowed to remove the thimbles, *I wedged the levers.*" The officials in charge of the road could hardly be otherwise than aware of the manner in which their instructions, if carried out to the letter, were broken in spirit. However this was a case requiring only to be mentioned in order to be remedied.

I have mentioned the above cases for the purpose of showing that the men of Nova Scotia have no greater regard for the value of human life than the men of Great Britain and Pennsylvania, where such accidents as the Hartley, the Oaks, and the Avondale disaster happening, aroused the spirit of the people of those countries to call on their governments to interfere and endeavor by wise legislation to guard against such wholesale slaughter in the future. In Great Britain inspection has been attended by a marked diminution in the number of accidents. In the anthracite regions of Pennsylvania the stringent bills passed by the State Sessions of 1870 and 1871 have been actively enforced, but have been in operation for too short a time to have any effect. In this Province, guided by the experience of Great Britain, the legislature appointed an Inspector of Mines, with the understanding that he should be ruled by the practice of English Inspectors. My predecessors in office governed themselves according to that understanding, but as I have had personally no experience of the working of the Inspection Acts of Great Britain, I should prefer to see a *written law*, not only for my own guidance, but also for the guidance of those actually engaged in mining, of whom a similar knowledge is required.

I therefore beg leave to call the attention of the Government to that which in my humble opinion seems an incompleteness in the present law relating to mines and to suggest (for the better preservation of life and property) an immediate and serious consideration of the necessity that exists for explaining more fully and explicitly section (5) of the Mines and Mineral Act, rather than to wait until some appalling disaster,—from which happily the Province has hitherto been free,—too plainly points to the necessity of legislative interference.

In view of the increasing royalty and the inevitable law which annually requires the sacrifice of a proportionate number of the men engaged in mining, should a Bill similar in purport to the Mines Regulation Act of Great Britain receive the approbation of the Legislature, it might well be supplemented by an agreement on the part of the Government to insure the lives of all miners against fatal accidents, demanding no premium from the men and agreeing to pay, say: $200 to the family of each unfortunate man, to every widow $1 per week for ten years or until marriage, and to every child $1 per week; to boys until they are 12 years of age. and to girls until they are 16 years of age. If such an agreement should be carried out it would obviate a good deal of suffering and misery.

I wish also to state that several of the Agents have called my attention to the different interpretations of the term "slack" as now rendered by the practice at certain collieries and the rough method adopted by others in estimating the quantities of coal sold and shipped.

As the varied practice is in consequence of the absence of legal definitions and requirements, I deem the settlement of these questions, which not only effect the amount of royalty due the Crown but also cause jealousy among the operators, to be of great importance, and I beg to suggest that an opinion be taken from persons who prior to the Act relating to the surrender of the mines to Her Majesty in 1858 were in the employment of the General Mining Association and capable of authoritatively stating what the clause, "*except coal now known in the said Province as slack coal*" positively meant.

I have the honor to be

Your obedient servant,

HENRY S. POOLE.

The Hon. Daniel Macdonald, M. P. P.,
Commissioner of Public Works and Mines.

APPENDIX.

DYNAMITE OR GIANT POWDER

Is made by mixing nitroglycerine with infusiorial earth. It is an ungrained powder, of a greyish brown color, resembling moist sawdust in appearance. Insoluble in water, it is not affected by time or exposure to air and moisture. It congeals at about 42° Fahrenheit. In the open air or in ordinary packing it burns without exploding. Its combustion produces carbonic acid, carbonic oxide, hyponitrous acid and water. When heated above 212 degrees (the boiling point of water) it throws off noxious fumes and becomes weakened and finally destroyed.

It should, therefore, be kept in some place having a temperature between these extremes:

When frozen it can be thawed by being kept for a time in this proper temperature. It is perfectly safe to thaw the powder by placing the cartridges in an open vessel and the vessel then placed in hot water. When it becomes soft it is ready for use, and its strength unimpaired. As it freezes very slowly, no inconvenient haste is required in its application.

Unlike gunpowder, its explosion is instantaneous. The entire mass of powder explodes as if it were a single grain. This quality in connection with its extraordinary evolution of gases, causes its explosive effect to be especially great in solid substances. Its explosion produces carbonic acid, nitrogen and water.

There are three methods of exploding it: 1st.—By a violent explosion either in or into it. 2nd.—By confining it in a very strong and tight vessel, and setting it on fire, or heating the vessel sufficiently. 3rd.—By a percussive shock so intense as to produce heat and violence equivalent to an explosion. Practically it cannot be exploded by accident. Fire alone will not explode it, nor heat in any form. Nor will any amount of mere weight upon it or simple pressure of any kind explode it. It cannot be exploded by any of the ordinary movements, accidents or incidents which attend its handling, transportation or use. The pressing it into cartridges, or ramming it into bore-holes with a *wooden rod* however hard, throwing it about, or even the crushing or violence of overturning wagons or collisions of cars will never explode it. The burning or flashing of gunpowder, unconfined, is not sufficient.

When set on fire while under *confinement* in some *tight* and *strong* vessel, the burning of the powder produces gases, which, finding no escape, at length cause a pressure so great as to produce, with the heat of the burning, an explosion of the unburnt powder.

A vessel of the strongest tin has not the requisite strength; it, like paper cartridges, ordinary packing boxes, barrels, casks, &c,, will be burst asunder by the gases before the pressure is sufficient to cause explosion.

Cartridges.—Except in special cases it is better to use the powder in the form of cartridges. It is more economical in both time and powder, and the explosion is more certain.

Fuse.—Ordinary fuse may be used, but to make sure of a discharge in all cases and to keep the powder from being burned by fire from a leaky fuse, the best fuse is recommended and of a size to fit the caps precisely.

Caps are manufactured for the special purpose of exploding Giant Powder. They are more heavily charged with fulminate than ordinary ones and corresponding care should be taken in their handling and use. A pair of cutting nippers, with their edges blunted may be used in securing the caps tightly and firmly to the fuse.

Drill-holes, Charges, &c.—As to the diameter and depth of holes, and where they should be made, and the direction they should take, and also as to the quantity of powder to be used and many other matters, no definite or arbitrary rules can be laid down for blasting with any explosive. As a general rule, the drill-holes and charges for Giant Powder can be and should be comparatively small. Experience has proved that 3-4 inch octagon steel with 3 1-2 pound hammers used by single hand drillers are best adapted to use the Powder to the greatest advantage. Holes one inch in diameter are abundantly large for all ordinarily heavy work; for light work, correspondingly smaller ones should be made. The quantity of powder should not only be proportionate to the resistance, but the hole should be proportionate to the powder. As by reason of its quickness, Giant Powder in bore-holes is nearly as effectual without tamping as with it, it can be exploded with great advantage without any tamping at all in natural fissure and artificial cracks. It is, therefore, urged that advantage be taken of this extraordinary quality as often as practicable.

Charging.—The charge must fit and fill the bottom of the bore and be packed solid. This is an essential pre-requisite to an effective blast. The only way to secure it is this: Take a cartridge as nearly as possible of the same size as the bore and cut it into sections from one to two inches long. With a *hardwood* rammer as large as will run freely in the hole, press these sections into the bore-hole one by one with sufficient force until each section is driven to the bottom and expanded laterally so as to fill the hole solidly in every direction. Any sized cartridge may be used provided it is thus put in. In wet holes, the sections should be rolled in additional paper and the ends closed to prevent the powder from getting mixed with water. *Metallic* rammers must not be used.

Firing the Charge.—The modes of exploding the charge are various. After the cap is put on the end of the fuse, and with a pair of nippers pressed firmly around the *edge* into the fuse, some grease, soap or wax should be rubbed round the upper end of the cap to make the same air and water tight. Now insert the fuse into the bore-hole until the cap rests on the charge, then take a small piece of a cartridge, about three quarters of an inch, push it down with the ramrod and press it round the cap so that the latter is inserted in the powder to about half its whole length, but never deeper, because if part of the fuse were in the powder above the cap would be burnt up without exploding. Another way of exploding the powder is to cut off about an inch in length of a cartridge, smaller in dimension than the borehole. press into this piece of so called "priming cartridge" the cap, after it is well fastened to the fuse, and with a string tie both together to prevent the cap from being withdrawn, then let this priming cartridge down the bore-hole until it rests on the charge, and fire the fuse.

The stronger grades of Giant Powder frequently do not require any tamping, and wherever *water tamping* can be used as for instance in all downward holes, it should be applied. It excludes every particle of air and forms a solid column on the charge.

In case the blast misses fire, put in another primer.

A TABLE

Of the Dimensions of Pit Tubs in use at the principal Collieries.

NAME.	Track gauge.	Dia. of Wheels.	Wheel base.	Height above track.	Width.	Length.	Height.	Capacity.
	in.	in.	in.	in.	in.	in.	in.	C. ft.
Joggings*	30	12	20	37	37	48	23	23.6
Acadia*	48	11	22	31	42	60	24	35.
Albion Mines*	26	12	18	42	33	44	28	23.5
Intercolonial*	32½	12	20	31	27	50	24	18.8
Nova Scotia*	48	12	22	41	40	60	28	38.8
Blockhouse	26	11	20	43	33	43	30	24.6
Caledonia*	23½	12	18	44	33	40	30	22.9
Glace Bay*	30	10	16	36	33	60	24	27.5
Gowrie	24	10	18	38	31	42	26	19.6
International*	32	14	18	45	30	49	29	24.6
Lorway	32	11	20	34	34	44	21	18.2
Reserve	26	11	20	43	32	44	30	24.4
South Head	24	8	16	26	27	42	16	10.4
Sydney	24	11	16	40	34	37	27	19.6
Victoria*	24	11	19	44	32	54	31	31.
Chimney Corner	24	12	20	37	33	42	23	18.4

*Tubs fitted with end doors.

COAL EXPORTS FROM GREAT BRITAIN AND UNITED STATES TO THE ATLANTIC PORTS OF AMERICA.

GREAT BRITAIN EXPORTED.	COAL. 1870.	COAL. 1871.	VALUE. 1871.
	Tons.	Tons.	
To British North America	224,955	189 274	£86.318
U States of the Atlantic	80,014	91, 483	61,524
British West Indies	174,198	175,335	99.387
Foreign West Indies	338,801	281,877	149,574
Mexico	3.256	2,821	1,227
U. States of Colombia..	2,893	11,241	7,190
Brazil	261,508	316.417	188,036
Uruguay	122.686	96.648	65,888
Argentine Confederation	59,729	62,860	42,970
Total	1,263,040	1,227,956	£702.114

UNITED STATES EXPORTED.	COAL. 1871.	COAL. 1872.	VALUE. 1871.
	Tons.	Tons.	
To Canada	216,633	.....	.....
Cuba.....	11,932	.....	.....
China	1,186	.....	.....
East Indies.....	1.284	.....	.....
U. States of Colombia..	31,383	.....	.....
Hayti.....	2,415	.....	.....
Other Countries	3,117	.....	.....
Total.....	267.951	300.878	$1,369.236

EXTRACT from the Custom House Reports, shewing quantities and value of Minerals Exportrd during the fiscal years ended 30th June, 1868, to 1871, inclusive.

MINERAL.	COUNTRIES.	QUANTITY.				VALUE.			
		1868	1869	1870	1871	1868	1869	1870	1871
Gold	Great Britain	. . .	. . .	. . .	. . .	$14334	$159810	$116145	$84152
"	United States	. . .	. . .	. . .	. . .	. . .	14900	14950	78000
						$14334	$174710	$131095	$162152
Coal	Great Britain	666	200	160	270	1443	325	280	450
"	United States	198920	376135	209448	252170	400652	578190	398621	470728
"	B. N. A. Provinces	45307	50659	54967	49308	95894	90632	99928	94924
"	British W. Indies.	820	1	1170	1381	1802	5	2289	2812
"	French W. Indies	. . .	. . .	2305	1551	. . .	. . .	5186	2332
"	Spanish W. Indies	4311	2407	10211	2879	8887	4364	17614	6720
"	South America	147	186	120	60	367	372	400	120
"	St. Pierre et Miquelon.	2589	2330	2699	3302	6118	8330	6036	6119
"	Spain	. . .	. . .	69	190	. . .	. . .	200	700
		252760	431968	281149	311116	$515163	$682218	$532554	$584905
Copper	United States	. . .	. . .	11	4	. . .	200	1325	208
Iron Ore	United States	. . .	. . .	. . .	54	. . .	. . .	. . .	270
Maganese	United States	156	156	1256	102	4700	4695	4102	1608
Grindstones.	Great Britain	. . .	. . .	. . .	. . .	. . .	. . .	. . .	3000
&c.	United States	83874	145053	. . .	. . .	72240	128132	298	24387
"	B. N. Provinces	2964	3312	. . .	. . .	3995	3789	27182	3754
"	Spanish W. Indies	. . .	. . .	. . .	. . .	. . .	. . .	. . .	200
"	British W. Indies	. . .	20	. . .	. . .	300	90	. . .	
		86838	148385			$76535	132011	$27480	$31374
Barytes	United States	. . .	185	. . .	. . .	. . .	1480	. . .	. . .
Plaster.		. . .	. . .	. . .	. . .	. . .	. . .	78587	82711

RETURNS Coal Raised and Sold during the Year ended December 31st, 1872.

MINE.	COUNTY.	Quarter ended March 31st, 1872.								Quarter ended June 30th, 1872.							
		Raised.		Sold for Home Consumption.		Exported to Neighboring Provinces.		Exported to other Countries.		Raised.		Sold for Home Consumption.		Exported to Neighboring Provinces		Exported to other Countries.	
		Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.
Joggins	Cumberl'd	1137	.....	40	12	.....	.....	.....	.....	3511	.....	283	48	3778	182	.....	.....
Lawson(Macan)	.....	93	.....	93	.....	.....	.....	.....	.....	30	.....	25	.....	.....	.....	.....	.....
Scotia	.....	417	99	403	.....	.....	.....	.....	.....	87½	32	69	.....	.....	.....	.....	.....
Spring Hill	.....	400	.....	400	.....	.....	.....	.....	.....	150	.....	.....	.....	.....	.....	.....	.....
Acadia	Pictou	17616	3515	11105	1740	.....	.....	1627	.....	26798	3717	16044	1995	6270	410	2835	.....
Albion Mines	.....	18654	5400	2733	134	.....	.....	.....	.....	19310	6305	2121	722	4710	942	8379	.....
Intercolonial	.....	9696½	3009¼	269¼	158½	.....	.....	.....	.....	18884½	4881	324	121	20961	2590	745	287
Mitchell & Co.	.....	122½	...	122½	65½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nova Scotia	.....	6480	1628	255	53	.....	.....	.....	.....	7553	1474	2546	74	376	673	2912	113
Vale, (McBean)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Block House	CapeBr'tn	4500	485	.....	.....	.....	.....	.....	.....	12000	229	145	.....	.....	.....	6655	.....
Caledonia	.....	6290	1569	106½	113½	.....	.....	245	.....	10025	2505	24	26	2101	.....	4342	.....
Emery	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gardiner	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glace Bay	.....	.....	149	14	15	.....	.....	.....	.....	14637	996	1241	82	1001	28	2739	.....
Gowrie	.....	6212	1660	312	.....	400	.....	456	.....	7104	2735	3408	573	2184	.....	798	595
International	.....	23	...	12	13	.....	.....	.....	.....	37 3	.....	8	15	55	.....	.....	.....
Lingan	.....	5562	1625	23½	120½	.....	.....	.....	.....	6848	1770	214	20½	.....	.....	4416	132
Lorway	.....	.....	.....	.....	.....	.....	.....	.....	.....	138	138	.....	.....	.....	.....	.....	.....
Ontario, (Clyde)	.....	.....	.....	38	91	.....	.....	.....	.....	825	50	.....	.....	.....	.....	404	.....
Reserve	.....	5635	1709	.....	.....	.....	.....	.....	.....	8870	840	22	.....	.....	.....	.....	.....
Schooner Pond	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Head	.....	313	.....	.....	10	.....	.....	.....	.....	297	.....	.....	.....	.....	.....	.....	.....
Sydney Mines	.....	15330	4774	1094	372	30	.....	780	.....	25441	6904	8057	231½	8400	.....	1434	.....
Victoria	.....	.....	...	.....	.....	.....	.....	.....	.....	4320	1430	1867	179	590	90	.....	.....
ChimneyCorn'r.	Inverness.	1807	...	.....	.....	.....	.....	.....	.....	1149⅓	127½	578	.....	240	10	216	.....
		100288	25613¼	17021¼	2898	430	.....	3108	.....	171772	34151½	36976	4087	50666	4925	35875	1127

MINE.	COUNTY.	Quarter ended September 30th, 1872. Raised. Round.	Raised. Slack.	Sold for Home Consumption. Round.	Sold for Home Consumption. Slack.	Expor'd to neigh'ing Provinces. Round.	Expor'd to neigh'ing Provinces. Slack.	Exported to other Countries. Round.	Exported to other Countries. Slack.	Quarter ended December 31st, 1872. Raised. Round.	Raised. Slack.	Sold for Home Consumption. Round.	Sold for Home Consumption. Slack.	Expor'd to Neigh'ing Provinces. Round.	Expor'd to Neigh'ing Provinces. Slack.	Exported to other Countries. Round.	Exported to other Countries. Slack.	Total Quantities Sold. Round.	Total Quantities Sold. Slack.	Round.	Slack.
Joggins	Cumberland.	4675	611	70	26	4605	345	.....	.....	2556	493	61	50	2496	195	.....	.....	11333	858		
Lawson (Macan)		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	118	.....		
Scotia		33½	9	22	.....	.....	.....	.....	.....	404	112	347	3	.....	.....	.....	.....	841	3		
Spring Hill		.....	.....	180	.....	.....	.....	.....	.....	900	.....	409	20	.....	.....	.....	.....	980	20	13272	881
Acadia	Pictou	40245	3758	17318	1863	15790	1470	12482	410	29358	3839	15145	1944	4910	1545	7725	435	111251	11812		
Albion Mines		28119	10452	3829	2213	9618	2616	26139	1509	23783	8477	5448	1703	5762	1623	17887	777	86626	12239		
Intercolonial		31874	13135¼	3336	234¼	34635	7918	3663	146	27785¾	6648	1365½	306½	16115½	3916	7982½	471½	89396¾	16148¾		
Mitchell & Co.		.....	.....	.....	.....	.....	.....	.....	.....	107	59	107	59	.....	.....	.....	.....	229½	124½		
Nova Scotia		18406	2580	8669	691	820	2074	15111	764	16392	2515	9031	664	820	2460	12099	385	52639	7951		
Vale (McBean)		.....	40	.....	.....	.....	.....	.....	.....	40	60	.....	.....	.....	.....	.....	.....	.....	.....	340142¼	482754
Block House	Cape Breton.	16743	.....	945	.....	.....	.....	22847	.....	12884	.....	3723	.....	.....	.....	8433	.....	42748	.....		
Caledonia		16015	4003	1 3	12	6378	.....	17576	500	9484	2369	1071	4	3750	.....	7720	204	43326	859½		
Emery		.....	.....	.....	.....	.....	.....	.....	.....	.....	495	.....	.....	.....	.....	.....	.....	.....	.....		
Gardiner		108	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
Glace Bay		10417	1196	2602	564	982	.....	10340	.....	10011	732	5228	111	2650	144	2974	.....	29771	944		
Gowrie		11772	3600	3530½	788	8613	1269	5999	4283	11746	3253	5066½	507	3480	841	2439	1160	36686½	10016		
International		3625	.....	41	76	927	60	3608	.....	14430	.....	30	.....	6300	.....	9353	.....	20334	164		
Lingan		10015	756½	246	16	474	.....	20414	794	11652	1278½	631½	92	2970	.....	7776	164	37165	1339		
Lorway		290	290	30	222	.....	.....	.....	.....	1237	1237	502	.....	32	.....	692	.....	1256	222		
Ontario (Clyde)		757	10	.....	.....	509	.....	349	.....	4119	74½	10½	20½	1178	.....	.....	.....	2488½	111½		
Reserve		9080	670	227	.....	.....	.....	6660	.....	11000	960	2367	48	15600	.....	2878	.....	27754	48		
Schooner Pond		680	20	.....	.....	.....	.....	.....	.....	2207	201	156	.....	608	.....	504	.....	1268	.....		
South Head		278½	.....	783	52	.....	.....	1014	.....	194	.....	.....	.....	.....	.....	.....	.....	1797	62		
Sydney Mines		34383	4279	15803½	507	27618	9	4146	396	30995	4235	7184½	999	18327	93	7209	.....	100083½	2607		
Victoria		5814	2689	4873	2430	2398	450	197	31	.....	.....	1008	548	3380	126	1045	10	15558	3864	360036	20237½
Chimney Corner	Inverness.	1095⅛	121⅛	1143	127	272	30	220	24	772	85	.....	.....	210	.....	.....	.....	2879	191	2879	191
		244125	48220	63661¼	9281¼	113639	16241	150765	8857	219357½	37123	58882½	7079	88589	10943	96716½	3606½	716329¼	69584¾	716329¼	69584¾

STATEMENT of the Average Number of Persons Employed; Number of Horses, etc., at each Colliery during the year ended December 31st, 1872.

COLLIERY.	Coal Raised.	Persons Employed.					Days' Labor.			Average No. of days per person	Average No. of Tons per person	Average No. of days per person in mine.	Average quantity raised per day—Tons.	Horses.
		In Mine.		On Surface.		Total.	In Mine.	On Surface.	Tetal.					
	Tons.	Men.	Boys	Men.	Boys									
Black Cumberland	- - -	- - -	- - -	7	- - -	7	- - -	319	319	45	- - -	- - -	- - -	1
Lawson (Maccan)	123	2	4	1	- - -	7	100	60	160	23	17	16	8	1
Scotia	1194	6	- - -	7	- - -	13	90	1015	1105	85	92	15	79	- -
Joggins	12983	38	9	23	4	74	8162	5030	13192	178	175	174	74	13
Spring Hill	1450	11	- - -	6	2	19	1121	1002	2123	112	76	102	14	2
Acadia, Pictou	128846	173	16	76	6	271	47306	22773	70079	258	475	250	515	16
Albion Mines	120500	253	50	171	47	521	70160	59757	129917	249	231	231	565	53
Intercolonial	115914	141	51	87	15	294	38207	25841	64048	218	397	199	582	14
Mitchell & Co	288½	4	- -	1	- - -	5	331	144	475	95	58	88	3	1
Nova Scotia	57028	80	12	49	4	145	23595	16391	39986	276	393	256	222	7
Vale (McBean)	140	7	- - -	12	1	20	2010	4009	6019	- - -	- - -	- - -	- - -	5
Block House Cape Breton	46841	82	22	81	8	193	18416	15987	34403	178	242	177	265	25
Caledonia	52260	67	9	50	4	130	19344	12010	31354	241	402	254	205	16
Collins	- - -	1	- - -	1	- - -	2	76	51	127	63	- - -	76	- - -	- - -
Emery	495	29	3	50	2	84	1160	2345	3505	- - -	- - -	- - -	- - -	4
Gardiner	108	28	1	8	1	38	6586	1788	8374	- - -	- - -	- - -	- - -	2
Glace Bay	38138	42	13	51	5	111	10277	12625	22902	206	343	187	204	20
Gowrie	48100	79	15	43	7	144	22206	11500	33706	241	334	236	204	24
International	21871	66	14	43	3	126	10907	6873	17780	141	173	136	161	29
Lingan	39507	73	20	60	7	160	20702	17156	37858	236	247	222	178	15
Lorway	3330	63	5	26	4	98	12522	6760	19282	197	34	184	18	14
Ontario (Clyde)	3135	12	1	27	1	41	1857	3105	4962	121	76	144	21	3
Reserve	38755	81	8	67	2	158	14185	16617	30802	195	245	159	243	13
Schooner Pond	3108	58	1	110	5	174	5017	11375	16392	- - -	- - -	- - -	- - -	6
South Head	1084	6	2	5	1	14	614	914	1528	109	77	76	14	1
Sydney Mines	126341	200	64	181	25	470	61600	50884	112484	239	268	233	542	66
Victoria	14253	97	9	43	3	152	28256	10558	38814	255	93	266	53	4
Chimney Corner, Inverness	5157	22	2	26	1	51	4254	3509	7763	152	101	177	29	1

TABLES shewing the number of Gold Mines worked, the average number of men engaged in mining, the quantity of quartz Raised and Crushed, the average yield per ton, and the total yield of Gold, &c., &c., in the several Gold Districts, as shewn by the Statistical Returns of the Deputy Commissioners

JANUARY, 1872.

DISTRICT.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power	Quartz Raised.	Quartz Crushed.	Yield per Ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	2	30	3	1	2	80	18	1	0	20	1	8	....	....	....	....	18	12	12
Wine Harbor	2	37	5	4	1	288	288	...	11	06	7	17	....	....	....	....	161	11	....
Sherbrooke	11	135	12	9	3	486	486	...	13	20	2	10	5	....	....	....	336	17	12
Tangier	3	55	4	3	1	60	212	....	9	23	...	18	10	....	....	....	105	11	6
Montagu	3	47	2	2	....	43	43	4	14	21	5	14	8	....	....	....	194	....	18
Waverley	2	65	4	3	1	72	95	...	12	04	....	14	16	....	....	....	57	17	....
Oldham	12	31	3	1	2	.....	78	1	2	16	2	13	...	....	....	....	87	18	23
Renfrew	8	27	5	2	3	.....	160	...	4	15	....	10	18	....	....	....	36	17	08
Uniacke	2	14	4	3	1	121	121	....	5	3	....	17	12	....	....	....	31	1	....
Caribou	2	10	2	1	1	22	.....	...	...	...	...	...	...	....	....	....	....	....	....
Unprocl'd. & other Dist's.	1	4	9	5	4	40	40	....	4	18	....	04	18	....	....	....	9	10	....
Total	48	455	53	34	19	1212	1541	...	13	12	7	17	....	....	....	....	1039	17	07

FEBRUARY, 1872.

Stormont	2	22	3	1	2	130	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wine Harbor	1	27	5	4	1	170	170	...	10	...	...	10	...	...	...	...	85	...	...	...
Sherbrooke	13	128	12	9	3	562	562	...	12	20	2	1	9	...	...	...	360	5	12
Tangier	3	51	4	3	1	97	287	...	08	01	...	15	03	...	...	...	115	08	7
Montagu	4	50	2	2	...	45	46	3	4	16	5	6	6	...	...	...	148	14	12
Waverly	2	45	4	3	1	287	236	...	10	14	...	11	07	...	...	...	128	19	...
Oldham	8	35	3	1	2	66	66	1	7	9	3	6	22	...	...	...	89	15	11
Renfrew	6	27	5	2	3	152	152	...	7	18	1	3	4	...	...	...	58	19	12
Uniacke	1	11	4	3	1	45	45	...	13	15	...	13	15	...	...	...	30	...	...
Caribou	2	10	2	1	1	24	...	...	...	...	...	...	...	...	...	...	...	...	...
Unprocl'd & other Dist's.	1	4	9	5	4	100	100	...	3	22	...	3	22	...	...	...	19	10	...
Total	43	410	53	34	19	1578	1664	...	12	11	5	6	6	...	...	...	1036	12	06

MARCH, 1872.

DISTRICT.	Number of Mines being worked.	Average No. of men daily employed in Mining.	Total number of Quartz Mills in District.	Do. Steam Power	Do. Water Power	Quartz Raised.	Quartz Crushed.	Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	2	28	3	1	2	100	1½	3	13	13	3	13	13	...	...	...	5	10	8
Wine Harbor	2	29	5	4	1	182	182	...	10	4	1	16	12	...	...	...	93	14	...
Sherbrooke	13	135	12	9	3	531	531	...	12	21	4	01	18	...	...	...	342	06	...
Tangier	4	60	4	3	1	123	226	...	8	20	...	14	04	...	...	...	91	7	20
Montagu	4	47	2	2	...	42	45	3	2	19	8	10	18	...	...	...	141	7	...
Waverley	2	50	4	3	1	72	...	...	...	...	...	...	...	...	...	...	...	...	...
Oldham	10	38	3	1	2	72	72	2	6	12	5	6	14	...	...	...	166	13	15
Renfrew	6	27	5	2	3	100	48	...	8	16	...	16	15	...	...	...	21	1	6
Uniacke	2	12	4	3	1	30	...	...	...	...	...	...	...	...	...	...	...	...	...
Caribou	2	10	2	1	1	24	...	...	...	...	...	...	...	...	...	...	...	...	...
Unprocl'd. & other Dist's.	1	7	9	5	4	180	180	...	2	22	...	2	22	...	...	...	26	2	...
Total	48	443	53	34	19	1456	1285½	...	13	20	8	10	18	...	...	...	888	2	1

APRIL, 1872.

Stormont	2	10	3	1	2	24	64	...	8	19	...	17	2	...	...	...	28	2	5
Wine Harbour	2	36	5	4	1	205	205	...	16	13	...	16	13	...	...	...	169	12	...
Sherbrooke	12	145	12	9	3	708	708	...	12	03	3	08	07	...	...	...	430	...	...
Tangier	5	17	4	3	1	52	91	0	07	12	...	19	18	...	...	...	34	13	...
Montagu	5	40	2	2	...	55	6	4	05	04	8	01	...	...	...	...	25	11	...
Waverley	2	42	3	2	1	110	110	0	12	14	0	14	02	...	...	...	69	03	...
Oldham	8	23	3	1	2	54	...	...	05	...	...	10	2	...	...	...	13	11	14
Renfrew	6	7	5	2	3	104	...	...	07	15	...	8	5	...	...	...	39	13	...
Uniacke	2	3	4	3	1	35	35	...	09	04	...	9	4	...	...	...	16	07	...
Caribou	2	12	2	1	1	120	10	...	03	03	...	3	3	...	...	...	18	17	...
Unprocl'd & other Dist's.	1	8	9	5	4	20	200	...	02	20	0	2	20	...	...	...	28	9	12
Total	47	343	52	33	19	1399	1697	...	10	07	8	01	...	...	...	...	873	19	17

MAY, 1872.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised. Tons.	Quartz Crushed. Tons.	Yield per Ton. Oz.	Yield per Ton. Dwts.	Yield per Ton. Grs.	Maximum yield per Ton. Oz.	Maximum yield per Ton. Dwts.	Maximum yield per Ton. Grs.	Gold obtained otherwise than from Crusher. Oz.	Gold obtained otherwise than from Crusher. Dwts.	Gold obtained otherwise than from Crusher. Grs.	Total yield of Gold. Oz.	Total yield of Gold. Dwts.	Total yield of Gold. Grs.
Stormont	1	10	3	1	2	35	.....	...	...	...	...	...	...	...	...	...	...	...	...
Wine Harbor	2	38	5	4	1	170	170	1	11	5	1	11	5	...	...	...	265	8	17
Sherbrooke	14	150	12	9	3	472	472	...	18	04	3	06	...	...	...	...	429	06	14
Tangier	4	13	4	3	1	106	*206	...	04	16	...	7	19	...	...	...	28	01	15
Montagu	5	40	2	2	...	55	81	3	01	19	9	06	19	...	...	...	250	7	...
Waverley	2	37	3	2	1	315	315	...	07	03	0	13	01	...	...	...	112	2	...
Oldham	10	30	3	1	2	.....	66	...	14	22	2	18	8	...	...	...	49	04	23
Renfrew	3	12	5	2	3	39	39	...	5	18	...	9	12	...	...	...	11	2	6
Uniacke	3	4	4	3	1	20	20	...	17	03	1	...	...	...	...	...	17	07	...
Caribon	2	8	2	1	1	17	27	1	03	22	1	03	22	...	...	...	32	6	...
Unprocl'd & other Dist's.	1	7	9	5	4	200	200	0	03	02	0	03	02	...	...	...	31	1	11
Total	47	349	52	33	19	1429	1596	0	16	09	9	6	19	...	...	...	1226	07	14

* 100 refuse.

JUNE, 1872

Stormont	2	11	3	1	2	75	125	2	...	13	4	1	18	...	...	...	252	18	5
Wine Harbour	2	27	5	4	1	120	...	...	...	...	...	...	...	...	...	...	...	...	...
Sherbrooke	12	117	12	9	3	322	322	...	19	03	2	...	...	...	...	...	308	02	08
Tangier	4	38	4	3	1	48	57	...	10	18	2	18	19	...	...	...	30	12	06
Montagu	4	49	2	2	...	55	39	8	3	13	14	...	...	...	...	...	318	18	...
Waverley	2	30	3	2	1	103	103	...	09	19	...	11	21	...	...	...	50	09	...
Oldham	6	19	3	1	2	...	23	2	4	8	3	...	...	...	...	...	51	0	8
Renfrew	2	16	4	2	2	...	26	...	4	23	0	4	23	...	...	...	6	9	...
Uniacke	3	7	4	3	1	26	26	...	14	10	2	...	...	...	...	...	18	10	...
Caribou	2	4	2	1	1	10	...	...	...	...	...	...	...	...	...	...	...	...	...
Unprocl'd & other Dist's	1	9	9	5	4	200	200	...	2	14	...	2	14	...	...	...	26	04	...
Total	40	327	51	33	18	959	921	1	03	02	14	...	...	...	...	...	1063	03	03

JULY, 1872.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily employed in Mining	Total number of Quartz Mills in District.	Do. Stoam Power.	Do. Water Power.	Quartz Raised.	Quartz Crushed.	Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	1	18	3	1	2	20	.....	...	...	...	...	...	...	...	...	...	...	...	...
Wine Harbor	2	32	5	4	1	213	313	1	4	18	6	10	8	...	...	...	492	...	...
Sherbrooke	11	120	12	9	3	259	259	1	6	4	2	17	...	...	...	...	339	2	12
Tangier	5	23	4	3	1	89	126	...	16	07	2	8	04	...	...	...	102	15	18
Montagu	4	50	2	2	...	46	46	2	18	11	3	9	14	...	...	...	134	10	...
Waverley	2	34	3	2	1	163	163	...	12	09	1	2	05	...	...	...	100	17	...
Oldham	8	27	3	1	2	84	84	1	14	8	9	4	18	...	...	...	144	12	9
Renfrew	4	19	5	2	3	64	64	...	7	2	...	7	14	...	...	...	22	13	...
Uniacke	3	5	4	3	1	38	13	...	11	18	...	19	...	...	...	...	7	13	...
Caribou	1	5	2	1	1	.....	.....	...	...	...	...	...	...	...	...	...	...	...	...
Unprocl'd. & other Dist's.	1	8	9	5	4	200	200	...	02	16	...	02	16	...	...	...	26	18	12
Totals	42	341	52	33	19	7116	1268	1	01	15	9	4	18	...	...	...	1371	02	03

AUGUST, 1872.

Stormont	1	18	3	1	2	146	146	...	14	18	...	14	18	.....	.....	...	107	15	...
Wine Harbour	1	47	5	4	1	220	220	1	9	19	1	9	19	.....	.....	...	328	...	....
Sherbrooke	11	115	12	9	3	492	492	...	18	12	1	12	18	.....	.....	...	460	15	20
Tangier	5	22	4	3	1	117	122	...	08	23	1	01	19	.....	.....	...	54	16	19
Montagu	3	43	2	2	...	59	59	2	17	22	3	2	...	.....	.....	...	170	18	...
Waverley	2	34	3	2	1	155	155	...	14	05	1	...	...	.....	.....	...	110	07	....
Oldham	6	27	3	1	2	96	96	1	5	...	5	6	4	.....	.....	...	119	8	...
Renfrew	4	15	5	2	3	60	.....	...	...	...	...	...	...	.....	.....	...	.....	...	...
Uniacke	2	3	4	3	1	12	37	..	14	18	8	14	17	.....	.....	...	65	16	...
Caribou	1	5	2	1	1	11	39	...	11	11	...	16	17	.....	.....	...	22	07	12
Unprocl'd & other Dist's.	1	9	9	5	4	200	200	...	02	16	0	02	16	.....	.....	...	26	14	10
Total	37	318	52	33	19	1568	1566	...	18	17	8	14	17	.....	.....	...	1466	18	13

SEPTEMBER, 1872.

DISTRICTS.	Number of Mines being worked	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.	Quartz Crushed	Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Totol yield of Gold		
						Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	1	13	3	1	2	21	21	1	5	17	1	5	17	....	....	....	27	....	....
Winc Harbour	1	23	5	4	1	204	24	...	2	20	0	5	....	....	....	....	†72	8	1
Sherbrooke	11	102	12	9	3	376	*876	...	17	15	1	5	21	31	....	....	362	10	20
Tangier	6	32	4	3	1	73	70	...	12	18	1	8	4	....	....	....	44	14	8
Montagu	3	42	2	2	...	31	31	3	6	05	5	...	...	....	....	....	102	13	....
Waverley	2	34	3	2	1	141	141	...	11	16	0	11	17	....	....	....	82	10	....
Oldham	6	27	3	1	2	45	45	1	8	7	3	13	18	....	....	....	63	12	2
Renfrew	6	23	5	2	3	88	88	...	7	16	1	0	14	....	....	....	30	13	....
Uniacke	4	5	4	3	1	35	....	....	....	....	....	....	....	....	....	....	....	....	....
Caribou	2	7	2	1	1	17	114	...	13	20	...	14	14	....	....	....	78	19	18
Unprocl'd & other Dist's.	1	9	9	5	4	300	300	...	2	....	...	2	....	....	....	....	30	9	08
Total	43	317	52	33	19	1331	1710	...	13	15	3	13	18	31	....	....	895	10	09

*500 Tons Tailings re-Crushed. †69 ozs. from Plates, &c.

OCTOBER, 1872.

Stormont	1	1	3	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wine Harbour	1	25	5	4	1	250	330	...	14	...	...	16	15	...	...	...	234	4	...
Sherbrooke	10	102	12	9	3	209	209	1	2	14	4	16	12	...	...	...	238	3	6
Tangier	6	27	4	3	1	44	72	...	17	14	2	9	...	...	...	...	63	05	18
Montagu	2	46	3	3	...	81	81	1	3	6	2	12	8	...	...	...	93	6	...
Waverley	2	42	3	2	1	154	154	...	18	3	1	3	18	...	...	...	139	12	...
Oldham	10	23	3	1	2	79	79	...	18	20	3	5	3	...	...	...	74	9	14
Renfrew	4	19	5	2	3	135	135	...	10	20	2	12	10	...	...	...	75	15	...
Uniacke	3	5	4	3	1	25	37	...	18	12	1	8	6	...	...	...	33	15	...
Caribou	4	4	2	1	1	15	47	1	1	8	2	17	8	...	...	...	50	3	18
Unprocl'd & other Dist's	4	41	9	5	4	330	300	...	2	6	...	2	6	24	10	10	58	10	10
Total	47	335	53	34	19	1322	1444	...	4	16	4	16	12	24	10	10	1061	4	18

NOVEMBER, 1872.

DISTRICTS.	Number of Mines being worked.	Average No. of men daily employed in mining.	Total number of Quartz Mills in District.	Do. Steam Power.	Do. Water Power.	Quartz Raised.	Quartz Crushed.	Yield per ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
						Tons.	Tons.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.
Stormont	1	1	3	1	2	.....	.....	..	..	..	..	..	..	....	....	....	.....	.....	..
Wine Harbour	1	19	5	4	1	130	230	1	7	23	1	14	4	....	....	....	321	12	13
Sherbrooke	10	110	12	9	3	394	394	..	13	13	1	14	3	*10	....	....	277	9	12
Tangier	6	30	4	3	1	69	82	..	18	08	1	6	9	....	....	....	75	04	..
Montagu	2	44	3	3	..	92	92	1	4	6	3	3	12	....	....	....	111	13	..
Waverley	2	39	3	2	1	115	115	..	13	16	1	..	8	....	....	....	78	16	16
Oldham	8	19	3	1	2	88	88	1	4	10	3	2	18	....	..	....	107	7	..
Renfrew	3	15	5	2	3	39	39	..	10	4	..	11	..	....	....	....	20	....	..
Uniacke	4	4	4	3	1	27	21	..	10	23	..	14	17	....	....	....	11	10	12
Caribou	2	5	2	1	1	15	15	..	3	16	..	5	10	....	....	....	2	15	2
Unprocl'd & other Dist's.	4	46	9	5	4	330	300	..	2	3	..	2	3	24	10	10	56	10	11
Total	43	332	53	34	19	1299	1376	11	15	11	3	3	12	34	10	10	1062	18	16

* Crushed sand, washed.

DECEMBER, 1872.

Stormont	2	4	3	1	2	85	168	..	3	19	..	19	19	....	.....	....	32	2	5
Wine Harbour	1	20	5	4	1	177	177	1	18	7	2	1	9	....	....	....	349	1	....
Sherbrooke	10	112	12	9	3	432	432	..	13	20	6	13	8	....	....	....	303	10	....
Tangier	6	33	4	3	1	54	71	1	3	..	2	19	16	.....	....	....	82	17	6
Montagu	2	34	3	3	..	114	114	..	17	19	2	2	14	....	....	....	101	12	....
Waverley	2	39	3	2	1	174	174	..	13	11	1	..	16	....	....	....	117	5	....
Oldham	4	31	3	1	2	42	42	1	2	13	2	12	..	.....	....	....	46	16	19
Renfrew	2	11	5	2	3	50	.....	..	..	..	..	..	..	.....	....	....	.....	....	....
Uniacke	2	2	4	3	1	6	9	1	..	15	1	05	..	....	....	....	9	11	....
Caribou	2	4	2	1	1	15	6	..	15	12	1	13	20	.....	....	....	4	15	12
Unprocl'd & other Dist's.	2	66	9	5	4	360	332	..	2	6	..	11	13	24	10	10	62	....	11
Total	35	356	53	34	19	1509	1525	..	14	13	6	13	8	24	10	10	1109	11	5

B.

STATEMENT showing the average daily labor employed, the amount of Quartz crushed, "the yield of Gold per ton of Quartz," the Quantities of Gold from Alluvial Mines, the yield of Gold, the maximum yield per ton in each District, and in the whole Province, and the value of the average yield of Gold per man employed in mining for the Twelve Months ending December 31st, 1872.

DISTRICT.	Average men employed.	Crushing Mills employed.	Steam Power.	Water Power.	Quartz, etc. Crushed.	Yield per Ton.	Gold from Alluvial Mines.	Total yield of gold	Maximum yield per Ton.	Average yield per man for Twelve Months at $18.50 per oz.
Stormont	14	3	1	2	543	.. 17 09	.....	472 00 11	4 01 18	623 71
Wine Harbour	28	5	4	1	2309	1 02 06	.....	†2572 10 18	7 17 00	1699 70
Sherbrooke	123	12	9	3	5323‖	.. 15 17	‡41 00 00	4188 09 21	4 01 18	628 27
Tangier	33	4	3	1	1622*	.. 10 05	.....	829 08 15	2 19 16	464 74
Montagu	20	3	3	..	683	2 12 12	.....	1793 10 06	14 00 00	1658 95
Waverley	19	3	2	1	1761	.. 11 17	.....	1032 04 00	1 03 18	1004 84
Oldham	28	3	1	2	793	1 05 14	.....	1014 10 14	9 04 18	669 96
Renfrew	18	5	2	3	855	.. 07 13	.....	323 03 08	2 12 10	332 00
Uniacke	6	4	3	1	364	.. 13 07	.....	241 10 00	8 14 17	743 08
Caribou	7	2	1	1	368	.. 11 09	.....	209 15 00	2 17 08	552 35
Unproclaimed and other Districts	18	9	5	4	2552	.. 02 13	73 11 06	402 00 13	.. 11 13	413 16
	314	53	34	19	17 173	.. 17 13	114 11 06	15079 03 10	14 00 00	888 41

* 100 Refuse. ‡ 10 oz. from Crushed Sand Washed. † 69 oz. from plates, &c. ‖ 500 Tailings.

No. 1.

Statement shewing the number of Men employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	STORMONT.					WINE HARBOR					SHERBROOKE.					TANGIER.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January	30	18	18	12	12	37	288	161	11	..	135	486	336	17	12	55	212	105	11	06
February	22	....	....	..	..	27	170	85	..	..	128	562	360	5	12	51	287	115	08	07
March	28	1½	5	10	08	29	182	93	14	..	135	531	342	06	..	60	226	91	07	20
April	10	64	28	02	05	36	205	169	12	..	145	708	430	..	..	17	91	34	13	..
May	10	....	....	..	..	38	170	265	08	17	150	472	429	06	14	13	‡206	28	01	15
June	11	125	252	18	05	27	....	....	..	..	117	322	308	02	08	38	57	30	12	06
July	18	....	....	..	..	32	313	492	:	..	120	259	339	02	12	23	126	102	15	18
August	18	146	107	15	..	27	220	328	..	..	115	492	460	15	20	22	122	54	16	19
September	13	21	27	..	..	23	24	*72	08	01	102	†876	362	10	20	32	70	44	14	08
October	1	....	....	..	..	25	330	234	4	..	102	209	238	3	6	27	72	63	05	18
November	1	....	....	:	..	19	230	321	12	..	110	394	277	9	13	30	82	75	04	11
December	4	168	32	2	5	20	177	349	01	..	112	12	303	10	..	33	71	82	17	05
Total	14	543½	472	00	11	28	2309	2572	10	18	123	5323	4188	09	21	33	1622	829	08	62

*69 oz. from plates, &c. †500 tons tailings. ‡ 100 refuse.

No. 2.

Statement shewing the number of Men employed, Quartz Crushed, and Gold obtained each Month in each District.

MONTH.	MONTAGU.					WAVERLEY.					OLDHAM.					RENFREW.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January	47	43	194	00	18	65	95	57	17	..	31	78	87	18	23	27	160	36	17	08
February	50	46	148	14	12	45	236	128	19	..	35	66	89	15	11	27	152	58	19	12
March	47	45	141	07	..	50	....	....	..	..	38	72	166	13	15	27	48	21	01	06
April	40	6	25	11	..	42	110	69	03	..	23	54	13	11	14	7	104	39	13	..
May	40	81	250	07	..	37	315	112	02	..	30	66	49	04	23	12	39	11	02	06
June	49	39	318	18	..	30	103	50	09	..	19	23	51	00	08	16	26	6	9	..
July	50	46	134	10	..	34	163	100	17	..	27	84	144	12	09	19	64	22	13	..
August	43	59	170	18	..	34	155	110	07	..	27	96	119	08	..	15	....	....	....	..
September	42	31	102	13	..	34	141	82	10	..	27	45	63	12	02	23	88	30	13	..
October	46	81	93	6	..	42	154	139	12	..	23	79	74	9	14	19	135	75	15	..
November	44	92	111	13	:	39	115	78	16	..	19	88	107	7	16	15	39	20	....	..
December	34	114	101	12	..	39	174	101	12	..	31	42	46	16	19	11	....	....	....	..
Total	20	683	1793	10	6	19	1761	1032	04	..	28	793	1014	10	14	18	855	323	03	08

No. 3.

STATEMENT showing the number of men employed, Quartz crushed, and Gold obtained each month in each District.

MONTH.	UNIACKE.					CARIBOU.					UNPROCLAIMED, &c.				
	Men.	Tons.	Oz.	Dwt.	Grs.	Men.	Tons.	Oz.	Dwt.	Grs.	Men.	Tons.	Oz.	Dwt.	Grs.
January	14	121	31	01	.....	10	.....	.....	.....	.....	4	40	9	10	.....
February	11	45	30	.....	.....	10	.....	.....	.....	.....	4	100	19	10	.....
March	12	.....	.....	.....	.....	10	.....	.....	.....	.....	7	180	26	02	.....
April	3	35	16	07	.....	12	120	18	07	.....	8	200	28	09	12
May	4	20	17	07	.....	8	27	32	06	.....	7	200	31	01	11
June	7	26	18	10	.....	4	.....	.....	.....	.....	9	200	26	04	.....
July	5	13	7	13	.....	5	.....	.....	.....	.....	8	200	26	18	12
August	3	37	65	16	.....	5	39	22	07	12	9	200	26	14	10
September	5	.....	.....	.....	.....	7	114	78	19	18	9	300	30	09	08
October	4	37	33	15	.....	4	47	50	3	18	41	300	58	10	10
November	4	21	11	10	.....	5	15	2	15	12	46	300	56	10	11
December	2	9	9	11	.....	4	6	4	15	12	66	332	62	00	11
Total	6	364	241	10	.....	7	368	209	15	00	18	2552	402	00	13

GOLD.

Mines Department for 12 *Months ended December* 31*st*, 1872.

DISTRICTS.	RECEIPTS. Rents.	Royalty.	Sites.	Totals.	EXPENDITURE. Salaries, Surveys, &c.	Return of Rents.	Return of Royalty.	Royalty Commission.	Lands.	Totals.
Oldham	361 21	393 31		754 52	246 60	52 67		25 08		324 35
Renfrew	496 44	188 09		684 53	473 83	1 95		7 29		483 07
Waverley	244 00	308 37	10 00	562 37			274 65	0 66		275 31
Tangier	121 61	306 72		428 33	15 00			2 82	144 40	162 22
Stormont	212 93	190 05		402 98	332 21	21 43		13 13		366 77
Wine Harbour	121 01	1004 00		1125 01	479 00			44 54		523 54
Sherbrooke	298 57	2018 63		2317 20	722 90	75 92		114 48		913 30
Ovens	35 79			35 79						
Fifteen Mile Stream	24 00			24 00						
Montagu	303 09	543 75		846 84	110 00	76 24		23 62		209 86
Uniacke	604 16	148 81		752 97	312 00			4 61		316 61
Wagamatcook					22 00					22 00
Gays River	66 68	107 21		173 89	2 00			5 36		7 36
Caribou	73 97	136 16		210 13		3 89		8 76		12 65
Unproclaimed	243 81			243 81	36 50					36 50
Prospecting Licenses				1217 39						24 83
Total	$3207 27	5345 10	10 00	9779 76	2752 04	232 10	274 65	250 35	144 40	3678 73

Supplmentary account of Expenses common to both branches of the Department:—

Stationery and Printing	$1865 39	
General Expenses	4283 23	
Postage	127 32	
		$5785 94
Expenses Gold		3678 37
" Coal		487 08
		$9941 39

OTHER THAN GOLD.

Mines Department for 12 Months ended December 31st, 1872.

COUNTIES.	RECEIPTS. Licenses to Search.	Licenses to Work.	Royalty.	Totals.	EXPENDITURE. Return Licenses to Search.	Return Licenses to Work.	Surveys.	Totals.
Annapolis	$19 47	.....	.....	19 47	.....	.....	.....	.....
Antigonish	80 00	.....	.....	80 00	.....	.....	.....	.....
Cumberland	2128 32	1409 04	1230 08	4767 44	20 00	.....	300 00	320 00
Cape Breton	929 06	747 34	33905 27	35581 67	19 47	.....	.....	19 47
Pictou	1429 39	271 01	28851 81	30552 21	39 47	.....	.....	39 47
Inverness	337 35	48 66	.....	386 01	20 00	48 67	.....	68 67
Colchester	338 94	25 00	.....	363 94	20 00	.....	.....	20 00
ings	19 47	.....	.....	19 47	19 47	.....	.....	19 47
Hants	80 00	.....	.....	80 00	.....	.....	.....	.....
Richmond	599 47	125 00	.....	724 47	.....	.....	.....	.....
Victoria	118 94	.....	27 17	146 10	.....	.....	.....	.....
Guysborough	60 00	.....	.....	60 00	.....	.....	.....	.....
Halfax	39 47	.....	.....	39 47	.....	.....	.....	.....
Total	$6179 88	2626 05	64014 32	72820 25	138 41	48 67	300 00	488 07

STATEMENT

RECEIPTS and EXPENDITURE for Twelve Months ended December 31st 1872.

RECEIPTS.			EXPENDITURE.		
Rents	Gold	$ 3207 27	Salaries and Surveys	Gold	$ 2752 04
Royalty	"	5345 10	Royalty Commission	"	250 35
Mill Site	"	10 00	Return Rents	"	232 10
Prospecting Licences	"	1217 39	Return Royalty	"	274 65
Licenses to Search	Coal	6179 88	Return Prospecting Licenses	"	24 83
Licenses to Work	"	2626 05	Lands	"	144 40
Royalty	"	64,014 32	Return Licenses to Search	Coal	738 41
			Return Licenses to Work	"	48 67
			Surveys	"	300 00
			Postage		127 32
			Stationery and Printing		1365 39
			General Expenses		4283 23
		$ 82,600 01			$ 9941 39

PROVINCIAL MUSEUM.

REPORT

ON THE

PROVINCIAL MUSEUM.

PROVINCIAL MUSEUM,

February 6th, 1873.

SIR,—I have the honor to submit the following Report on the Provincial Museum under my charge.

In my Report of last year, I gave the classification of the objects displayed in the Museum, and a description of the more prominent specimens.

In the present Report I propose to notice the principal additions that have since been made, arranging them according to the order I then adopted.

ECONOMIC MINERALS.

A block of Granite from Shelburne, presented by Captain McLean.

A block of Gypsum from Arichat, C. B., presented by Mr. W. Clough.

Two blocks of Limestone from George's River, C.B., presented by Sheriff Bell.

A collection of Cape Breton Marbles.

A collection of specimens of Auriferous Quartz from Isaac's Harbor, presented by the Hon. Wm. Annand.

Iron Ore from Londonderry, Nictaux and Annapolis.

The late Mr. A. P. Ross, of Pictou, presented a large slab of Copper Ore from Tilt Cove and a block of Bituminous Coal from George's Bay in Newfoundland.

To the Department of

SCIENTIFIC MINERALOGY

have been added,—

Asphalt, from the Dead Sea, presented by Mr. H. Bland, Berkshire, England.
ANDALUSITE *var. Chiastolite.*
Tourmaline.
Tantalite.
Limonite.
Meteoric Iron, from the Desert of Atacama in Bolivia, presented by Mr. H. Bland, Berkshire, England.
Manganite.
Nickel.
Bismuth.
Copper ores.
Silver ore, presented by Mr. H. S. Poole.

GEOLOGY.

To the Rock Collection I have added 122 specimens from George's River, C. B.; Arisaig, and Halifax and its environs, N. S. These were collected during surveys made last Summer. They are principally Crystalline and Sub-crystalline rocks from the Azoic and Lower Silurian Formations.

These are accompanied by maps which they are intended to illustrate.

Prof. Nichols has contributed a collection of Rocks and Minerals from New Brunswick, and Mr. Fletcher a similar collection from Newfoundland.

PALÆONTOLOGY.

A collection of Silurian Fossils from Arisaig.

A collection of Lower Carboniferous Limestone Fossils from N. S. and C. B.

A large collection of Carboniferous Fossils from the North Joggins.

A collection of English Oolitic Fossils presented by Dr. Clay.

Mr. Harris, Artist, P. E. I., presented two large and beautifully executed figures of the *Megatherium* and *Mammoth.*

This Department has been greatly enriched by the generous donation made by Mr. H. Poole, of his valuable collection of Fossils from Nova Scotia, Cape Breton, and other countries.

At the meeting of the Institute of Natural Science, Mr. Poole stated that this collection contained many rare and valuable specimens of Fossils of the Coal Formation, that Mr. Selwyn, Director of the Geological Survey, had solicited the collection to be described by Dr. Dawson among the decades of the survey. Mr. Poole, however, preferred to deposit them in the Museum, where they would be accessible to the members of the Institute and Students of Geology in Nova Scotia. He considered that the Museum in the Capital of the Province whose natural history they tended to illustrate was the proper place of their destination.

In the Botanical Department, the additions made are chiefly foreign.

A fine specimen of Manilla Hemp, presented by Mr. Wm. Stairs.

A section of the Bark of the Mammoth Pine of California, presented by Mr. George Thompson.

The top of a gigantic Reed from the shores of the Dead Sea, presented by Mr. H. Poole.

IN ZOOLOGY.

Human anatomy has had important additions by the presentations of Dr. Page, and the skull of a Mic-Mac, presented by Dr. Weeks.

There have been added to the Mammals,—

The Star-Nosed Mole—*Condylura cristata.*

A fine specimen of the Wild Cat, *Lynx rufus*—male.

The fœtus of a Porcupine, *Erethizon dorsatus*, presented by Mr John Dalton.

Porpoise, *Phocena communis*—in a jar.

Mr. Edward Binney presented a noble pair of Ox Horns from the Cape of Good Hope.

Hon. D. Macdonald a noble pair of Moose Antlers from Antigonish.

Mr. Thomas, a White Musquash Skin.

BIRDS.

Mr. Egan presented a fine specimen of the English Raven,

Skin of Emu presented by the Hon. D. Macdonald.

Two Skins of Albatross presented by Captain G. W. Clarke.

A Skin of the Chinese King-Fisher presented by Mr. John Graham Amoy.

In the Class,—

REPTILES

Are *Chelonians.*—The Heart of a Turtle.

The Carapace of a gigantic Turtle, from Porto Rico, presented by Captain Hiorth.

Saurians, Lizards—foreign.

Ophidians, Snakes—Native and foreign

Amphibians, Frogs and Salamanders—Native and foreign.

H. E. Sir Hastings Doyle, Dr. Gilpin, Mr. Poole, and Capt. G. Clarke, were the principal contributors.

In the Class,—

FISHES.

A Young American Angler—*Lophius Americanus*, wet preparation. A Sea Trout—*Salmo Canadensis*, weight 7½ pounds, presented by Mr. Payzant.

Dog Fish, old and young.

Foreign—A very young Flying-Fish and a Sea Horse—*Hippocampus*, presented by Capt. C. H. Campbell.

A very large Cow Fish, presented by Dr. Griffiths, H.M. Royal Alfred.

In the next sub-kingdom—

MOLLUSCA

there are many additions.

Mr. Edward Binney presented a collection of shells containing a large number of specimens.

MOLLUSCOIDA

have also had additions.

The sub-kingdom

ANNULOSA

Has had the addition of a very large *Lobster*, *Crabs*, *Shrimps* and *Parasites* from the mouths of Flying-Fishes, presented by Capt. J. H. Campbell.

Scorpions, *Centipedes*, *Tarantulas*, *Beetles*, from India and Brazil, also *Locusts*, *Butterflies*, and *Moths*.

INSECT ARCHITECTURE.

A beautifully constructed nest of *Mygale Cœmentaria* from California, presented by Mr. George Thompson.

The Sub-kingdom

ANNULOIDA.

A medusa-head Star Fishes, *Asterophyton* from Margaree, C. B., presented by Mr. Grant, Sydney, C. B..

A large and beautiful *Echinus* from Nassau, presented by Lieut.-Colonel Jolliffe, H. M. S. Royal Alfred.

A large collection of *Echinarachnis* from Cole Harbor, presented by Miss Isabella Fairbanks.

A large collection of Star Fishes, large and small, some with 6 rays.

The Sub-kingdom

CŒLENTERATA.

Corals from the West Indies and a beautiful specimen of *Nulliporea.* Coral from Labrador, lat. 54° N., presented by Mr. J. M. Mackay.

Sertularidæ, various species.

The Sub-kingdom—

PROTOZOA

Sponges from Halifax Harbor, presented by Mr. J. M. Jones.

A very beautiful group of Tubular Sponges attached to a *Spondylus princeps,* taken off Cadiz, presented by Capt. J. H. Campbell.

Abundance of *Foramenifera* attached to *Chiton, Sertularidæ,* &c.

The Zoological Collection is now amply sufficient to illustrate any course of lectures on Zoology.

THE ETHNOLOGICAL DEPARTMENT

has received additions.

Two New Zealand War Clubs, presented by the late A. P. Ross, Esq.

A South Sea Island War Club, presented by Capt. Graham, R. A.

A Weapon armed with Sharks Teeth, presented by Mr. E. Binney.

Embroidery, Printing and Carving from China, presented by Mr. John Graham, Amoy.

Feather Tippet from India, presented by Miss Carrie Ham.

Three Arabian Horse Shoes from Jerusalem, presented by Mr. H. Poole.

A Mandingo War Cap, presented by Mr. Albert Payne.

Jewish Phylacteries from Poland, and a Needle Gun, presented by Mr. H. S. Poole.

IN THE DEPARTMENT OF ANTIQUITIES

There have been added—Stone Axes, Arrow Heads and a Stone Pipe—the pipe came from River Dennis, C. B. A number of the arrow heads were presented by the late Hon. Wm. Garvie.

A singular specimen is from Newfoundland, T. J. Egan.

From Louisburg Harbor there is the Chain Plate of a French Frigate, presented by Mr. Daniel Cronan.

There is also a Medal struck in commemeration of the taking of Louisburg, having the effigies of Admiral Boscawen, dated 1758, presented by Mr. Hamilton, of New Jersey, a plan of Louisburg, Harbor and Fortifications, dated 1758, presented by the Rev. Dr. Hannan.

Among the curiosities added there is a pistol which belonged to Mr. William Cobbit, M. P., presented by Mr. Ratchford. A picture of the Great Pyramid, presented by His Excellency Sir Hastings Doyle.

IN THE DEPARTMENT OF NUMMISMATOLOGY,&c,

There have been added many Coins, Ancient Roman, Modern European, Asiatic and American—Paper Currency of the Colonies before the Revolution.

A Quebec Assignat of 1758, presented by Mr. Gilbert Seaman, Minudie and Assignats of the French Republic.

There is also an Antique Gem with the figures of Cupid and Aphrodite, found at Jaffa, presented by Mr. H. Poole.

Of Nova Scotia manufacture there is a collection of Axes, presented by Messrs. Bill and McKay, Liverpool.

FINE ARTS.

Two old Italian Paintings, presented by the late Hon. Wm. Carvie, and a Bust of H. R. H. Prince Albert, presented by Stephen & Son. A portrait of His Excellency Sir Hastings Doyle.

NAVAL ARCHITECTURE.

Model of a Ship, presented by Captain Ryerson, M. P. P.

LIBRARY.

A number of volumes have been added.

The Ceremonial copy of Jury Awards of London Exhibition of 1862, presented by A. M. Uniacke, Esq.

Rapport sur L'Exposition Universelle de 1867, at Paris, presented by the Imperial Commission.

Any report of progress that can be made, cannot but fail to convey any adequate idea of the character and extent of our Museum. It must be visited, examined and studied, in order to be adequately appreciated.

It is evident to every one at a glance, that our Museum Collection is large and varied. It requires frequent visits, close examination and varied knowledge to realize its richness.

Yet the Museum is very far from realizing the aims and expectations of its promoters. Greater accommodation will be required for a proper and adequate display of our mineral resources. A proper appreciation of the utility of securing such a display and an honorable fulfillment of promises made to contribute specimens are necessary for the gaining of the object contemplated.

It was also intended to make the Museum a School of Mines. The collections in the Museum are admirably adapted for this purpose. Already public opinion has assented to our view, in reference to the establishment of such an institution, and it requires only the assent of the Legislature to confirm them. Science classes have already been established, and are now in their third session. In the first session there were 8 students; in the second, 11; This session there are 23 students, of these 22 attend the Geological Class, and 23 that of Zoology and Palæontology. In these classes the instruction given is to a large extent special, i. e., relating to Nova Scotia and Cape Breton.

Several of the gentlemen who attended my lectures last session assisted me in field work, especially in my survey of Halifax and its environs.

The Institute of Natural Science continues to hold its meetings in the Museum with mutual benefit to both Institutions and to the cause of Physical Science in Nova Scotia.

The Provincial Museum is no longer a novelty. It is

four years and a half since it was established. Its popularity is still increasing and the influx of visitors is steady I have no means of ascertaining the number of visitors that have been admitted during the past year. The number has unquestionably been very considerable. Town and country have each contributed their quota, and a great proportion have been strangers.

Assured that you will take as deep an interest in the prosperity and success of our institution as your two predecessors in office.

I have the honor to be,

Your obedient servant,

D. HONEYMAN, D.C.L.

Director.

The Hon. D. Macdonald,
Chief Commissioner of Mines.

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA.

FOR THE YEAR 1873.

HALIFAX, N. S.:
PRINTED BY THE CITIZEN PUBLISHING COMPANY.
1874.

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DEPARTMENT OF MINES,
Halifax, January, 31st, 1874.

SIR,—

The undersigned has the honor of forwarding to you the Report of the Inspector of Mines relative to the Mines of Nova Scotia, for the year 1873, for the consideration of His Honor the Lieutenant Governor.

D. MACDONALD,
Commissioner of Public Works & Mines,

Hon. W. B. VAIL,
Provincial Secretary, Halifax.

REPORT

ON THE

INSPECTION OF MINES,

UNDER LEASE FROM THE CROWN,

IN THE

PROVINCE OF NOVA SCOTIA,

For the Year ended 31st December, 1873,—By HENRY S. POOLE, F. G. S.,
ASSOCIATE OF THE ROYAL SCHOOL OF MINES.

HALIFAX, January, 1874.

SIR,—In the following report which I have the honor to transmit, I have added, beside the customary references to the present condition of the mining industry in the Province, certain suggestions for your consideration regarding matters which generally affect the working of Crown property. Most of these are in connexion with the Act for the Regulation of Mines which the Legislature last session enacted to come in force with the present year; and a few bear on the practice of mining in other countries and the recommendation they have for our attention.

Some of the statements hitherto scattered throughout the body of the report are collected in the form of a table and placed in the Appendix. Information respecting the several coal areas held by

lessees, the names of lessees, the names of their agents, the extent of the areas held, &c., is for the first time published. Tables of the coal trade of Great Britain and the United States are also given for comparison, that our exporters may readily see which markets are open to our competition. It will be observed that while the United States exports into Canada 428,455 tons, they import from us but 264,760 tons. The details of our trade are given in the appended tables, and although the information stated is in a more abstract form than hitherto, I trust it will be found to contain all that is required, and be useful for comparing the extent of the trade with that of other countries.

General Summary of the Returns of the Mineral Produce of Nova Scotia, Received by the Department of Mines, 1873.

Number of Mines.	Minerals.	Quantities.	Value.
28	Coal.....tons.	1,051,467	$2,699,347
33	Gold (17708 tons quartz,) oz.	11,852.4	219,270
3	Iron.....tons.	3,485	10,455
	Plaster..... "	120,693	120,693
	Freestone..... "	2,820	34,532
	Moulding Sand..... "	130	260
	Plumbaginous Shale..... "	11	110

The active demand for coal which sprang up in the autumn of 1872 was immediately renewed on the opening of navigation and was maintained until late in the year. Even in August, when there is usually a slackness of trade, the demand remained as great as before and prices continued to rise as contracts previously made became filled. The best qualities of screened coal which a year before were selling, free on board, at $2.25 per ton with a discount of 10 per cent, sold at the close of the season at $3.25 to $3.50 per ton; other varieties of coal, less in demand, at rates ranging downward to $2.50 per ton. The total produce of the country amounted to 1,051,467 tons, an increase of 170,517 tons over that of the previous year. The trade was increased by 95,198 tons, 12 per cent; the sales amounting to 881,106 tons. Though still of no grand proportions its comparatively prosperous condition is shown in the following tabular statement.

		Produce.	Sales.	Royalty.
1871	Tons	673,242	596,416	$52,846.65
1872	"	880,950	785,914	$69,722.69
1873	"	1,051,467	881,106	$78,874.36

Prospects.—The prospects for the present year are good, for a ready demand is generally anticipated. Possibly the output may be as much as 1,250,000 tons. It is not likely, however, to exceed this quantity even if the demand is greater, for the capacity of most of the collieries is limited and cannot readily be expanded without a further outlay, which operators who invested during the dull times and have had to wait so long for dividends, are naturally averse to make. The great demand for coal and the remunerative prices obtained by all the established collieries caused many enquiries to be made by promoters of mining speculations for property in the Province, but up to the present time no scheme that may have been set on foot has yet taken tangible shape. Although the attention of capitalists has been drawn to the undeveloped property of the Crown, they have been largely deterred from embarking in fresh schemes by the heavy expenditure known to have been incurred at many of the existing establishments, where it had been found necessary to supplement the sums of money actually required to develope the mines by large outlays on railways, artificial harbours, and shipping wharfs. The country having been to some extent opened up by these expenditures, facilities may now be acquired in certain localities by less pretentions concerns for coal mining on a moderate capital.

Prospecting.—Much attention was given during the year to prospecting for all minerals expected to occur in the Province, the labor expended being more particularly directed to the discovery and extension of seams of coal and beds of iron ore. An unusual number of licenses to search and work were taken out, and by the end of the year, with those previously granted and still in force, ground was covered by applications of the various denominations to the following extent: First rights of Search 313; Second 111 ; Third 50 ; Fourth 23 ; Fifth 7 ; Licenses to Work 95; in all covering an area of 1565 square miles. Applications were taken out most numerously in the following named counties in the order of their priority ; Cumberland, Pictou, Cape Breton, Inverness, Colchester, Richmond and Antigonish.

What the results of the prospecting in the several localities mentioned have been, I am but in few cases able to state, as few reports of the explorations were made to the Department as required by the terms of the Licenses ; in most cases because the licensees have made no discoveries and consider they have no information to transmit, or are 'middlemen' who have done no work; in some, because ignorant of the kind of information required, and in a few, because the licensees fear advantage may be taken by persons holding contiguous areas, of any information they may impart. The value of this last excuse is altogether imaginary, for the rights of licensees are well protected; but to facilitate the making of the required reports of exploration it might be advisable to supply a form of Return to accompany the license.

Dynamite.—In the last report reference was made to the advantages accruing in other countries from the use of powerful explosives for blasting ; and to the probable benefit to be derived in this by the introduction of dynamite. It was expected that a supply could be obtained from England and a trial made in the gold mines and in colliery sinkings, but on further enquiry it was found that the new regulations respecting its transportation recently issued by the Home Office, threw insuperable obstacles in the way of its importation. The previously existing restrictions were imposed when dynamite was little understood and thought to be akin in its dangerous qualities to nitro-glycerine, and the new regulations were made, it was expected for the, purpose of removing instead of augmenting the legal obstructions thrown in the way of its introduction into general use. Instead of doing so they are practically prohibitory of its exportation, and causing, as they do, so much annoyance to the miners and quarrymen using it in England, have produced an outcry which has extracted a half promise that they will shortly be entirely removed. As we must for the present rely on foreign countries for our supply, since the Dualin, a somewhat similar material, manufactured in the Dominion, has not so far given satisfaction, it is to be hoped that this will be done. Closely connected with the use of powerful explosives is that of

Drilling Machines.—Abroad a great deal of attention is now

bestowed on the invention of and perfecting machines already invented to substitute for the slow and expensive method of drilling by hand. Much success has already attended the use of rock drilling machines in undertakings of magnitude where time is the great element of consideration. For boring holes to prove the nature of underlying strata the Diamond Drill stands unrivalled, since in its operation it is more expeditious, cheaper and satisfactory than any system yet invented. In the sister Province of New Brunswick two such drills are in use,—one owned by the Government exploring for coal at Grand Lake and the other in the hands of Mr. Blight searching for the continuation of the celebrated vein of Albertite near Hillsborough. Mr. Blight has handled his machine with great success as regards the boring, having put down—so far as I can learn—the deepest hole yet made by a drill of this kind. His boring reached a total depth of 1040 feet.

What is now more particularly wanted is a cheap, simple and efficient machine that can be readily applied to the ordinary work of a mine, sinking and drifting. More particularly do we require such an apparatus in our gold mines, where the successful adoption, attended by economy of time and labour, would enable mines now lying idle or merely paying working expenses to yield a handsome profit. Many machines invented for this purpose have met with considerable success. For soft bituminous shales the McDermott handborer has been found most serviceable. For harder rocks, the McKeen and Burleigh Drills have proved efficacious, but will be surpassed it is expected by a new borer, called the Kainotomon, which lately tested, has received a practical approval in Cornwall. It is described as much simpler and cheaper than any one hitherto brought out, and should it fulfil its promises will augment the facilities for mining which the scarcity of skilled labour now restricts. At the Albion Mine, Montagu, Mr. Lawson has introduced one of Burleigh's drills. He finds it very efficient, but on account of the multiplicity of parts, and the inexperience of his workmen in its use, he does not feel warranted at present in purchasing any more.

Barriers and Plans.—In my report of October 27th, 1873, written in pursuance of the Mines and Minerals chapter, section 5,

I alluded to the troubles consequent on the inaccuracy of the plan of the Acadia Co's pit workings, and the neglect to maintain the barriers of coal reserved between the excavations in adjacent leases. Much of the trouble arose from the disregard paid to the express stipulation in the leases respecting the maintenance of barriers aggravated by the imperfect state of the plans; and excuses were found in the absence of a precedent showing the value of the stipulation requiring the reservation. The trouble thus occasioned has raised a question regarding the correct position of certain lease lines which have not hitherto been defined by posts or monuments of durable material and of a permanent character. Of these two difficulties the first will be met by the new act, the Mines Regulation Chapter, which requires that correct plans shall be kept, and compiled from accurate surveys made at least once in every twelve months. It also indirectly requires data to be taken and kept by which the extent of all leading places, levels and head-ways can be at intermediate times laid down with approximate accuracy.

The second still requires a remedy: the leases not having hitherto stipulated for the establishment of permanent marks to define beyond cavil the metes and bounds of each area leased. Disputes must be expected, and will without doubt arise whenever the workings of rival companies approach each others' boundaries. To avoid as far as possible disputes arising in the future, many lessees have expressed their anxiety to see some well considered plan, requiring the establishment of such permanent marks defining the boundaries of all leased mining areas, approved by the Legislature. Many of the areas are very irregular in shape and the temporary stakes placed to mark the corners when the original surveys were made cannot always now be found, and unless some uniform system of maintaining undisputed the side lines as originally surveyed is devised, conflicting interests will sooner or later lead to litigation. I therefore beg to suggest that this subject receive the consideration which it appears to require.

Weighing.—When it was proposed to require that all coal on which royalty is payable should be weighed, representations were made by interested parties that the requisition would entail a large outlay on the part of the lessees, and occasion grievous detention when the business was large. By such representations

a wrong impression was produced as to the object of the clause. The subject seemed to me of sufficient importance to bring it to your notice in my last report, and I did so, but briefly, hoping that those interested would acquiesce in the justice of my suggestion and not raise an opposition that might make it necessary to investigate and expose previous shortcomings and inaccuracies. As, however, they thought otherwise, I may, without bringing a direct charge against any one, be more explicit. The terms of the leases distinctly state that the royalty shall be so much per ton, and that ton to weigh 2240 lbs. Several of the companies and their agents accepted the terms literally, and called my attention to the practice of others who did not, as they did, weigh all the coal they sold. Others were in the habit of averaging the quantity and I have no reason to believe otherwise than fairly, while some roughly guessing at the amount, took care to allow a sufficient margin for loss.

It was to put all on the same footing and to do justice to those who, sending accurate returns, considered it but fair to them and the Crown, that all in like positions should be required to weigh all coal paying royalty. It was argued that it was absurd to say that the owners to save seven or eight dollars royalty would give away seventy or eighty tons of coal, the impression being that the Quarterly Returns sent to the Department, were made on the quantities actually sold and paid for. Such, however, has not always been the practice, for in some cases the returns have been made by colliery officials who never saw the sales account kept at the head office of the company, it may be, in some principal and distant city. To the company it is of no consequence what amount the colliery charges the head office with, so long as it is under the quantity actually received. The royalty has thus been paid on the total quantity compiled from the several amounts stated on the bills of lading, which in known instances have been 70 tons short on a cargo of 900 tons and 30 tons on a cargo of 400. To the shipmaster as a rule, it matters not what the quantity invoiced be, for the freight is made payable on the amount delivered, his bill of lading being made out so many tons more or less.

Last year I was not in a position to know that any owner or agent had previously sent either intentionally or through negligence

sworn returns which were inaccurate, but I am now prepared to show that the Returns on a large out-put for the year 1872 from one concern were 20 p. c. incorrect; and I have the best authority for stating that the returns of another were not within 5 p. c. of the quantity sold.

As I before remarked, had custom sanctioned a uniform discount which was recognized and acted on by all without any distinction, I should not have regarded the question of so much importance or considered it necessary to do more than report the practice of such discount, but as I believe it is one more between lessee and lessee than between the Crown and the lessees, I feel justified in writing thus plainly.

It must be acknowledged that some companies would be put to the additional expense of erecting proper weighing scales, but their complaints of the hardship of complying with this requirement should have little weight when it is due to their own mismanagement that they are unable to comply with the terms of their leases. The objection 'that grievous detention would be caused when the business is large' is one that it appears to me a practical man should hesitate to raise. What is done at a thousand collieries in England and at some of our mines, can surely be also done at every other well regulated colliery in this country. While I am still of opinion that where the business is large every ton should be weighed, I at the same time think it might be advisable to have the following proviso attached to the section. 'Provided that when the output of any mine to which this section applies is irregular, and written representations are made to the Commissioner that by reason of the temporary character of the arrangements at the mine, or the smallness of the output, the lessee would be subjected to great inconvenience and expense by strictly complying with the provisions of this section, then the Commissioner may, if the Inspector is satisfied that the lessee has adopted a reasonably satisfactory system of estimating the weight of the mineral by measurement or by averaging, grant, if he think fit, an extension of time for complying with the provisions of this section.'

Special Rules.—An important decision was recently given in England relative to the liability of colliery owners for the default

of their servants under the Mines Regulation Act, 1872. This decision is of interest to owners and managers in this country, for it turns on the wording of a certain clause of the Act which is identical with a similar clause in the Mines Regulation Chapter of the Revised Statutes of this Province.

One of the General Rules having been broken, an action was brought against the owner, who it appears had made Special Rules under the Act and had properly appointed subordinates to carry out the provisions of those Rules. After summing up the evidence, the judges stated in their decision :—That the colliery owners, however, are not liable where all ordinary precautions are taken for any negligence, we think, is sufficiently shewn by the last paragraph of the "General Rules" by which it is provided that, "in the event of any contravention or non-compliance with any of the said General Rules in the case of any mine to which this Act applies by any person whomsoever being proved, the owner, agent and manager shall each be guilty of an offence against this Act, *unless he prove that he had taken all reasonable means*, by publishing, and to the best of his power enforcing, the said rules and regulations for the working of the mine to prevent such contravention or non-compliance." Therefore, having employed properly qualified persons to fill certain positions, defined their duties, and enforced in every way the rules and regulations for the working of a colliery, it is evident that the liability of the owner and manager ceases and responsibility rests with those who, by negligence, commit an error interfering in any way with the safety of the workmen.

This decision, exonerating the owner who has made Special Rules, clearly leaves him amenable where he has not done so, and a General Rule is broken by servants on whom no responsibility is made to rest. Hence, the necessity for owners and managers establishing Special Rules in order to relieve their own shoulders of as much of the burden imposed by the Act as the Act will allow, and impose the due share of responsibility on those in subordinate positions in whose hands, to a large extent, rest the safety of their own lives and the lives of the working men.

But fatalities also occur and accidents are caused by the want

of discipline not directly required by the Chapter and not readily made controllable by general rules but easily so by special rules made suitable to the peculiar requirements of the particular colliery they are intended to govern. At the present time, some of our best regulated mines have been alone managed by verbal rules—in some with good effect—but as it is impossible to maintain discipline as strictly as is often advisable on account of the difficulty of imposing or rather enforcing penalties not legally imposed, the advantages of special rules legally constituted are very apparent.

To instance a case not directly governed by the General Rules of the Chapter, but which occurring in England would have been controlled by Special Rules, I will here notice in detail the occurrence of an accident at the Vale colliery on the 22nd November.—On the evening of that day, two countrymen, strangers to the mine, appeared on the "bankhead" and asked permission to visit some friends of theirs who were below. It is said that the Banksman demurred at first but finally permitted them to go down. They remained below for some time and on returning were accompanied by one Daniel McDonald, a young man about twenty years of age, who undertook to see them to the surface. On arriving at the bottom of the slope they found the trolly loaded with coal and jumping on it one of them gave the signal to hoist. The trip started and when about 400 feet up the slope—which is very steep—the drawbar bolt broke and the trolly with its load rapidly descended to the bottom. McDonald was instantly killed, William Hendricken so seriously injured that he died in a few days and Andrew Walsh got his leg broken, and was otherwise injured.

Now it is generally understood in this country and is an established special rule in England, that the Banksmen and Onsetters in charge of shafts and steep inclines are not to allow any person to descend or ascend without permission from the proper authorities, nor to allow any one to ride with full tubs. Here, then, was a manifest breach of good discipline attended by disastrous results, and it appears to me that, this one case alone, is sufficient to show why special rules should be framed to make those in the position of Banksmen and Onsetters, responsible to the extent of their duties.

Certificated Managers.—The products of the mine being either absolutely or practically limited in quantity, once extracted cannot be reproduced by cultivation as the products of the soil; they should therefore be regarded as property held in trust by the present for the public benefit of this and future generations, and should with watchfulness be protected from waste and lavish consumption. Though there is a natural tendency for all corporations holding but temporary lease of such property to endeavor to reap as speedily as may be the largest present gain, without respecting the true welfare of the property they hold, we cannot yet complain of a lavish expenditure of our mineral products, but we can of wastefulness connected with the management of many undertakings. Without any exaggeration it can be said that large sums of money have been uselessly expended on the development of our mineral resources while yet the business is comparatively insignificant. In referring to this waste it is not advocated that it could for the future be entirely prevented by the employment of certificated managers, but the advantage to the country and to the lessees of Crown property to be derived from the employment of throughly efficient men is only too apparent to capitalists and others familiar with the past history of our mining enterprises.

It has been deemed expedient in this country that the law should interfere and require that the masters and mates in charge of our marine shall be men in whom trust can be placed, men who by practical experience and professional education, are, up to a certain standard, fitted to fill the positions they occupy. If this then has been considered necessary, where the property concerned is not directly owned by the Crown, how much more should some prudent supervision be exercised in the case of our mines which are?

In England where the mineral rights are held by private owners, the law requires a certificated manager to be in charge of every mine, and although there has been a good deal of doubt expressed as to the thoroughness of the present system of granting certificates there adopted, it is evidently a move in the right direction, and naturally suggests a similar movement in other mining countries. Since the law has been in force and an opportunity given to observe its working, it has been suggested by some of the Prize Essayists writing "On the Prevention of Catastrophes in Mines" that it

would be an improvement were all colliery officials required to possess certificates, not only the manager or chief person in authority, but also that the overmen, deputies, and firemen, should be required to possess certificates of 1st 2nd or 3rd class according to the positions they hold. There can be no doubt but that men in such positions as deputies and firemen should have that amount of book learning essential for the proper performance of their duties. An efficient fireman should be able to say why fire damps collects near the roof and choke damp near the pavement, and explain how atmospheric changes of temperature and pressure effect mines, and increase or check the outflow of gases from the measures. Few can do so; but were it made compulsory by law that after the lapse of a certain number of years all officials should hold certificates of competency, obtained by passing examinations on mining matters relating to their special duties, we might then hope that great improvements would take place in the safety of our mines.

Certificates of service might be granted to all officials who have held their positions for one year previous to the commencement of the regulation; which certificates should be only of service so long as the holders remained at the mines in which they were at the time of the granting of the certificates.

There are many among the working miners, who, possessed of the requisite natural ability and determination to succeed, would strive to improve their position, by strenuous efforts in their spare hours, did they have before them the inducement to supply their lack of early education, which the opportunity to earn certificates of competency would hold out to them. There are men now holding responsible positions at some of our mines, who have made their way by the determinate exercise of their natural energy of character, and the success that has crowned their efforts, should give much weight to any opinion they may form on this subject, and I believe their opinion is generally in favor of such a scheme as is shadowed forth above. While there are few men possessed of the indomitable pluck requisite to induce them to strive against years of discouragement, there are many of natural ability who would, could they work their way by easy stages, gaining well defined positions of advancement as they strove, be induced to improve their leisure time and endeavour to fit themselves for positions of trust and greater emolument. Were such an opportunity given, then would the general standard of education in the mining community be elevated and the moral tone improved.

COAL MINING.

CUMBERLAND COUNTY.

The attention of the public, which for some years has been directed to the Coal field of this County, was more effectually called, during the past year, to the many advantages it possesses. The actual produce, though small, was comparatively a large increase, and the active preparations now in progress warrant expectations of a continued proportionate increase for this and future years.

Important additions to our knowledge of the resources of the Spring Hill District have been made. The Black or Eleven feet seam, has been proved to the Westward, to lie iu a straight line as far as Miller's Hotel, where it bends somewhat suddenly round to the Southward. The continuation appears to be further deflected until at a distance of about one mile from the Spring Hill Colliery, it, or a seam very similar in character, is found trending still more to the Eastward and with a Southerly dip. Should subsequent explorations prove the correctness of this surmise, and determine the lay of the seam, untroubled by serious faults, a rapid development of the coal trade in this County may be anticipated. The Thirteen feet seam, originally discovered on the General Miuing Association's property, has been proved to be an overlying seam, but has not yet been traced beyoud the bend.

By these discoveries the prospective value of the contiguous areas owned by Mr. Livesey and others, on which much money has beeen spent in surface explorations, has been greatly enhanced and stimulus given to further exploration.

In anticipation of the facilities for transit which the trade of this county must require when the collieries now being started are fully developed, and when the output exceeds the local demand

along the line of the Intercolonial Railway, (as it must shortly do) a Company has already begun to build a Railway from Spring Hill to Parrsboro'. By this branch road the mines will be put into communication with tide water at the nearest and most convenient point for shipment, and the operators be enabled to compete in the markets of New England, at present chiefly supplied from Cape Breton. Analyses of the Coal, making it highly bituminous, warrant the expectation that it will be found suitable for gas making, for which purpose about two million tons are annually required in the towns of New England favorably situated for suppliance from the coast. The quantity at present provided for this purpose by Nova Scotia is somewhat under a quarter of a million of tons.

COLLIERIES.

Joggins.—The changes made in the system of working and the facilities for increasing the production mentioned in the last report, enabled this colliery to greatly extend its business during the past season. Two new incline roads worked by counterbalances have facilitated the transportation underground. The system of 'long-wall' adopted in one district of the workings has been proved well adapted to the requirements of the seam and will be extended to other portions of the workings as circumstances allow.

Scotia.—The business of this colliery is altogether local and is consequently small. The coal now mined is from the second seam 4′ 3″ in thickness, underlying the main seam, which is 2′ 9″ in thickness, about ten feet. The slope which is 300 feet deep, dips at an angle of 38°.

Spring Hill.—The crop openings used in 1872 for the extraction of coal were abandoned and slopes to the East and West, three quarters of a mile apart have been started. The West slope has been driven some 400 feet and the requisite pumping and winding machinery erected. The engine is a single 16 in. cylinder with a four feet 6 inch stroke, geared three to one, driving a 9 feet drum. Engines of a heavier class and more permanent character are in course of erection at the East slope, where in future the principal output is expected to be made. The ventilation of the present workings is effected by a furnace 6 feet wide erected at the outcrop. Twenty houses, each of two tenements, have been built for the accommodation of the workmen.

PICTOU COUNTY.

The bright prospects with which the coal trade of this County opened, were early marred by strikes, and later in the spring, the lamentable explosion at the Drummond colliery, destroyed all hopes of the output exceeding that of the previous year. The falling off amounted to 38,767 tons, and the sales decreased 54,433 tons.

Much attention was given to prospecting, and explorations were extensively made in various parts of the county. At Caribou Island much interest was caused by the discovery of a seam which by the outcrop promised to be some four feet in thickness, but which subsesequent operations failed to realize, The seam appears to be faulted where struck, and where it is regular, it has not yet been opened. Outside the well known field the explorations were attended with but indifferent success.

A Company has been formed with the intention of proving, if possible, the measures lying north of the New Glasgow Conglomerate. A borehole has been put down 500 feet at Sutherland's Point, and shales, very similar in appearance to those of the coal bearing basin to the south, have been reached. The encouragement thus given will, it is hoped, induce the Company to proceed in their investigation and continue the boring for another 500 or 1000 feet. The value of such an undertaking, in the event of its being successful, cannot be over-estimated,for as the measures lie regular and but slightly inclined, a large tract of country would in all probability be proved by the one operation.

COLLIERIES.

Albion Mines.—The General Mining Association have transferred this property with all their rights, leases, and real estate, in the county to the Halifax Company (Limited) who have since carried on the operations under the same management.

In the deep seam worked by the Cage Pit, the engine plane has been extended to a total length of 700 yards, and levels driven from the

bottom to the north and south. An attempt was made to pump the water from the deep by a Cameron pump, the steam for which was conveyed through 1000 yards of naked pipes, but it was found that the pressure reduced from 35 to 8lbs. was not sufficient for the work. Preparations are being made to encase the pipes in some non-conducting material. The ventilation effected by a small furnace amounts to 9,900 cubic feet of air per minute.

In the Main seam worked by the Foord Pit, the north levels have been driven three quarters of a mile; and near the face a pair of stone drifts have been started to the west to intersect the Deep seam, which, it is expected, they will do at a distance of 180 yards. It is proposed in this way to drain and in part work that seam. The Guibal Fan, to which reference was made in a previous report, was put in operation and was found by experiment to give when running at the moderate speed of 47 strokes, 75,000 cubic feet of air per minute; of which quantity 64,400 feet passed through the returns. Shortly after the fan was started, the use of powder was resumed in these workings and the practice initiated in conformity with the new Act. No powder is used in the levels where there is the greater likelihood of feeders of gas being cut, and there the men still use the wedge. On the south side the levels have been driven through the fault, which was ninety feet thick, and a self acting inclined road made to win the rise coal.

The manufacture of Coke has been continued, and the quantity is stated to have been 462 tons. Of late it has been made of duff, the screenings from slack coal.

Acadia.—Although the sales from this colliery are 13,088 tons behind those of last year, they have not been surpassed by those of any other in the Province. The brunt of the strikes in the spring was borne by this colliery, and work had hardly been renewed when it was again suspended for a time in consequence of the Drummond explosion. The exploitation of the mine has since been much extended and the slopes for a new lift are being driven. The pillar working has been continued and has been followed in places by the subsidence of the surface to the no small anxiety of the inhabitants of Westville. A fourth set of three boilers, of

the same kind as those previously in use has been aided to supply the increased power required as the workings extend to the deep. When tested in the autumn, 29.000 cubic feet of air were found passing over the furnace per minute.

Intercolonial.—During the early part of the year, this colliery was worked most energetically, and every preparation made to increase the output as rapidly as possible. The exploration of the mine was further increased by driving the main slopes some 300 feet or more to the deep to open out a fourth lift, thus making them about 1750 feet in length. A large stock of coal was banked on the surface and about 7000 tons stowed in the upper workings of the mine. In all, a greater quantity was on hand, than that possessed by any other company when the spring trade opened with every prospect of a successful year's business. Early in May the shipping had already become vigorous, when a strike of the colliers for certain privileges and higher rates of wages closed the workings. After a week's intermission, an agreement was made with the men and they resumed work on the 13th. About noon on that day, a shot fired in one of the low levels on the south side of the pit ignited the coal. Every exertion was made, as detailed in the evidence at the inquest, to put out the fire, but the peculiarly broken condition of the face of the level prevented the men from attacking the flame where the burning gas directly issued in great volume from the solid coal. The fire spread rapidly and as it was soon evident that the chances of subduing it were small, an order was issued that all the hands, who were disinclined to assist at the fire, should leave the pit. Many had previously left, having been driven out of their bords by the smoke. The boys, all except one, had gone up, and of the rest, all but about a dozen men who remained with Richardson, the overman, at the fire, left the lowest landing to walk up the slope. Richardson and his men who so heroically remained to battle with the fire, so long as there was the slightest hope of success, must soon have followed to endeavor to check as speedily as possible the progress of the flames, and save the pit by closing all openings. No attempt to do this was, however, made, for before many of the men who were in the slope had time to escape, an explosion of gas, unexampled on this continent for violence,

occurred, dealing on all sides death and destruction. The sad details are given in the published abstract of the evidence taken at the inquest. The force of the explosion was so great that the wooden rope rollers were torn from their track and hurled out of the slope, as from the mouth of a cannon, falling in the woods some two hundred yards back of the bankhead. Great baulks of timber 14 feet long, by 9 inches through, were cast up out of the Campbell pit to so great a height that on falling, they struck the ground with such force as to fracture them, and the rush of air swept away as would a hurricane the exposed roof of the bankhead. Many explosions took place during the afternoon, and the second occuring about two hours after the first, killed four volunteers who were nobly endeavoring to rescue some men then known to be alive at the bottom of the pumping pit. By the second explosion the ventilation was thoroughly destroyed, and as hopes could no longer by entertained that any life still existed in the mine, all the preparations to explore the workings were then abandoned, and attention alone directed to saving property. The violence and frequency of the explosions struck terror into the hearts of all who rushed to the scene and paralyzed the efforts of those who sought to close the openings. All the available water was turned in to cut off the lower workings, and effectually scaled the bottom of the pumping pit. Still the fire raged, despite every exertion, for 36 hours, and the flames shot up with a fierce roar to the height of from thirty to forty feet from the many openings along the crop. Two days passed before the men engaged in filling the openings had effectually sealed this fiery grave of fifty-five of their comrades.

The workings remained closed until the end of October, when one of the slopes was opened and the air allowed to circulate between it and the opening made by a fall near the rise. At the end of a fortnight and just when appearances seemed to warrant preparations being made to re-open the workings in a regular manner, the return air showed unquestionable signs that the fresh air was finding its way into places where the heat was still sufficiently intense to cause combustion of the coal or the bituminous shales of the roof. In consequence the pit was again closed and remained so up to the end of the year. Proparations are now in progress to make an entry by

No 1 slope, conducting into the mine no more air than is requisite to supply the men working at the end of the brattice, timbering the slope and stopping the crosscuts, in the hope that by leaving the air of the mine undisturbed, the necessary stoppings may be built to cut off the south side where the fire raged most fiercely and enable the north side to be separately re-opened. The prospects of success are most encouraging.

An apparatus, invented by M. Denayrouze called an ærophore, has lately attracted much attention in England, and the tests made have proved it to be of practical value for just such service. By its aid, says the inventor, a man, encumbered by no more than 8 or 10 lbs. weight of apparatus, may penetrate at once and to a great distance into a pit filled with choke damp or any other gas, remain there for several hours, carry a lamp with him without danger, and have free use of his arms. The apparatus is of two kinds; a low pressure apparatus, which requires that air should be pumped to the miner through india rubber tubing from the nearest point at which pure air can be found; and the high pressure apparatus, which enables the miner to carry his own supply of fresh air in a receiver, and thus make him independent of communication from without. So satisfactory were the experiments considered, that the apparatus was regarded as invaluable for enabling a miner to explore a working charged with gas or to recover a man who could not otherwise escape, and orders were at once given for several to be kept at the collieries in the neighbourhood of the place where the experiments were made.

To keep up a small business until a new winning can be made, a pit some 70 feet has been sunk to the coal lying to the south of the second fault. Subsequently a slope was started and engine erected to continue the workings to the deep and the coal lying between the faults. A small pit was also opened on the second seam and the coal gives promise of being of marketable quality. The seam yields about ten feet of clean coal.

Nova Scotia.—On the workings of this colliery approaching the southern boundry of the area, several holings were made into the rise workings of the Acadia, so that instead of a solid

barrier of unwrought coal existing, as required by the terms of the leases, to keep the workings distinct, the communications are numerous and the value of the reservation destroyed. A late survey of the surface and workings proves the correctness of the plan of this colliery's workings and exonerates the Company from any liability connected with the destruction of the barrier.

The operations have been of the ordinary character though much extended. Some trouble has been occasioned by the tender nature of the roof, coupled with the high inclination of the seam, and some bords have been lost by 'crushes.' The ventilation is effected by a furnace, over which some 44,000 cubic feet of air pass per minute.

Vale.—The past year was spent in perfecting the arrangements for working on a large scale. No mining was done beyond driving the slopes and the levels when the main slope had reached a total depth of 850 feet. The chief expenditure was on the surface, building dwellings, constructing a railway to New Glasgow, and preparing a shipping wharf at Pictou Landing.

CAPE BRETON COUNTY.

The trade of this County amounted to 520,189 tons, exceeding that of the year before by 37 per cent. The success attending it was attained notwithstanding the serious check received by the hurricane of the 24th August, which, by disabling a large number of vessels and damaging shipping piers, reduced the shipments by at least 25,000 tons below what they would otherwise have been.

COLLIERIES.

Sydney.—The detention unfortunately caused in the sinking of the new pits at Lloyd's Cove by the irruption of a heavy feeder of water which necessitated the lining of the shafts with cast iron tubbing, has prevented the output from

this colliery being much augmented. The progress lately made in the sinking renders it probable that one of the shafts will reach the seam before the end of the current year, and the new winning be in full operation in 1876. When this is effected, the facilities for production will be greatly increased.

The difficulties attending this enterprise being of an unusual character, at least, hitherto unmet with in this country, the means adopted to overcome them are worthy of note. At the place where the sinking is in progress, the coal is expected to be struck at a depth of 696 feet. To win it, two shafts were started in the year 1867, and the erection of the requisite machinery begun. When the shaft intended for the winding shaft had reached the depth of 267 feet, the heavy feeder of water, which caused the temporary abandonment of work, was struck. Preparations had then to be made to case the shafts and while sinking to pump the water until a water-tight stratum on which to seat the wedging crib of the tubbing was reached. But first an adit was driven through the measures from the seashore, a distance of 516 feet, for the discharge from the pumps. For the pumping, an engine of 240 horse power was erected; the cylinder of which is 62 inches in diameter with a stroke of 9 feet. The cylinder stands over a staple shaft in which, when complete, the upper lift of pumps will be placed, the piston rod projecting through the bottom of the cylinder for the attachment of the spears. For the sinking, a 20 inch set of pumps are used, hung in blocks from the surface. Powerful crabs, seven in all, are in use for putting in and lifting the pumps, spears, cradles, &c.; the main ropes being 14 inches in circumference. The winding engine is a direct acting horizontal engine of 160 horse power, having two cylinders, each 36 inches in diameter with a five feet stroke. The rope drum is 18 feet in diameter. Each engine is supplied with steam from a set of four plain cylindrical boilers 5 feet 6 inches in diameter and 35 feet long, fed with water by a donkey engine of 7 inch cylinder. The flues lead into a chimney 85 feet high.

A jack-engine with two horizontal cylinders 14 inches in diameter, is at present employed in sinking the pumping shaft.

When the sinking of the winding shaft was temporarily abandoned, every preparation was made to continue that of the pumping shaft, and during the past year the water bearing strata were pierced, 300 feet of tubbing inserted and the feeder in that shaft dammed back. For much of the time the engine had to combat with 650 gallons of water per minute. At the end of the year the pumping shaft stood at a depth of 335 feet, and the staple pit in which work was resumed, on the feeder in the pumping shaft being tubbed back, at 305 feet. In the latter, tubbing is now being put, and it is expected that the whole of the 301 feet of tubbing required will be shortly in place. When this is completed the remaining 70 feet in the staple pit and the 379 feet in the pumping shaft will be resumed dry. To estimate the difficulties connected with such an operation and the detentions occasioned, it must be remembered that all the changing of buckets and clacks has to be done from the top of the shaft, and that very much time is consequently consumed. First the spears have to be raised, disjointed one by one, the bucket changed, or if it be the clack that is done, the 'fish head' attached with which to get hold of the clack, the spears reconnected, and the clack withdrawn, replaced, and the operation repeated with the bucket. Then the pump is again started, and after some hours' pumping the water, which has rapidly accumulated during the changing of the bucket, is removed, and work resumed.

Lingan.—The working of this colliery was of the ordinary character up to the 1st June, when a fire occurred, and the openings had to be closed. Subsequently an incline road, known as Hall's slope, was opened and some coals were thus obtained, but the business was greatly retarded in consequence of the fire.

The fire is supposed to have originated by a body of gas—ejected perhaps by a fall of the roof—coming in contact with the furnace fire, and causing an explosion which would temporarily reverse the current of air, and occasion the fire which was shortly afterward discovered to be burning in the coal adjoining an underground boiler supplying steam to a

force pump at the deep. In confirmation of this theory, the wooden cupola at the top of the air shaft, was seen suddenly to burst into flame, and then as a reversion of the air took place, the flames for a short time poured down the upcast. The stoker at the underground boiler seeing the flames pour out of the furnace doors, left and went up the slope. The furnace man happened at the time to be getting coal for his fire, and did not see the reversal of the current. The pit was not at work at the time, and no lives were lost. Attempts were made to put out the fire, but they proved ineffectual, and in fear of an explosion the pit was closed. The south side still remains so, although no fear now exists that the fire is still burning.

A new furnace has been erected at the foot of a new upcast 65 feet deep, sunk further to the Northward, where there is a greater natural elevation.

At the Barrasois a small quantity of coal has been mined in the land area.

Victoria.—One of Cameron's special steam pumps has been placed half way down the slope to relieve the main set of pumps which it is expected will be shortly required for the further extension of the slopes to the deep.

Gardiner.—The shaft in course of sinking last year has been put down to the coal, and levels and headways are being driven to open up the mine. Substantial machinery has been erected. For winding, two horizontal engines, with cylinders 20 inches in diameter and a four feet stroke, directly act on the shaft of the drum which is 8 feet in diameter. For pumping, two of Cameron's steam pumps have been placed below; one with a 14th inch cylinder, 24 inch stroke and 7 inch plunger, the other with a 12 inch cylinder, 12 inch stroke and 6 inch plunger. Steam is supplied by four plain cylindrical boilers 27 feet long and 3 feet 3 inches in diameter. The winding rope is of steel four inches in circumference. The pit tubs adopted are 3 feet 7 inches long, 2 feet deep and 2 feet 10 inches in breadth. The wheels 9½ inches in diameter, and the guage 2 feet 2 inches.

Reserve.—The ventilation has been improved by substituting for the fire lamp a furnace which is 5 feet 6 inches wide and 6 feet from the floor to the crown of the arch. To carry off the surface water an adit has been driven from the outcropping of the seam in a depression.

The coal wagons in use on the Glasgow and Cape Breton Co.'s railway were found in practice to be unsuited for the coal and the loading of large vessels at the shipping pier at Sydney. They have been altered and a flat substituted for the pitched floor. To empty them tipping tables have been put at the pier, and they have been found to work satisfactorily. There can be no question but that for tender coals,—and all the coals of Cape Breton require careful handling,—drops and reverse shoots are destructive. Besides the saving of the coal by having it slide directly from the wagons on to the shoots instead of dropping many feet on to the shoots or from a height directly into the hold of the vessel, an advantage is gained by the use of tipping tables and wagons with side or end doors, in that a less elevation above the vessels' deck is required.

Too little attention has been hitherto paid by shippers in Cape Breton to the size of the coal sent to market. Much of it gets broken up and shaken by being so tumbled about, that it suffers much at the ports of discharge with a consequent depreciation in value. The change in the manner of shipping at the pier at Sydney cannot be otherwise than beneficial to the coals passing over the Glasgow and Cape Breton railway.

Lorway.—The workings at the West Pit in the crop coal of the Lorway seam have been closed, and the sinking of the permanent pits has been discontinued.

Emery.—This colliery has been opened by the Lorway Co. on a seam overlying the Lorway seam and underlying the Phelan, worked at the neighbouring Reserve Colliery. A slope has been driven and levels won off on both sides. The seam shows 4 feet 9 inches of coal, underlaid by 2 feet 6 inches of fireclay and 1 foot 6 inches of coal.

Schooner Pond.—On driving the slope down some 600 feet the seam was found to thin down from 8 feet to 4 feet 3 inches, and the dip to flatten from 1 in 10 to 1 in 18. At this point the sinking has been stopped and the workings temporarily abandoned. No doubt the seam will be found further to the deep to resume its old dip and to be of the same thickness as it is to the West, the flattening and thinning being due merely to a local trouble. The seam is the same as that worked at the Emery Colliery, and as it has been variously named the Ross, Spencer and McPhail, names designating seams in the Low Point and Cow Bay sections, it has been thought better to avoid confusion in the future, and to re-name it the Emery.

International.—The ventilation of the pit has been brought under control by a furnace six feet in width, built to the rise of the present workings. A planeway is being driven to the deep and bords opened on both sides. The wire rope being worked by an engine on the surface and conducted down the winding shaft to the planeway.

Glace Bay.—At the Hub pits the operations have been of the customary character. At the Harbor, the pits for the new winning have not yet reached the coal, but the sinking is being steadily prosecuted.

Caledonia.—The leading headway has been driven to the crop and a travelling road made of it. A self-acting incline road has been made on the East side, worked by a 4 feet clip drum and a steel wire rope 630 feet long. The dip of the incline is one in twelve. On the surface two eight tenement and four two tenement dwellings have been built.

Ontario.—No change has been made in the method of working, and the business remains small.

Blockhouse.—The business of the colliery suffered severely by the August storm, which damaged the shipping wharf so that for a time only vessels of moderate draft of water could be loaded.

Gowrie.—A modified system of longwall working has been started in one district of the pit for an experiment. The seam appears well adapted for longwall working pure and simple, and it is expected that the workings in connection with the new pit will be so conducted. A light locomotive has been placed on the railway to replace the horses previously employed. In the mine two self-acting incline roads have been made and found economical.

VICTORIA COUNTY.

New Campbellton Colliery, the only one in the county, was re-opened after lying idle for some five years. The operations have been chiefly directed to restoring the railway buildings and openings to the mine. Some new machinery has been procured for furthering the outpit of this year.

INVERNESS COUNTY.

Chimney Corner.—The destruction of the engine house and miners' dwellings by the fire on the 3rd March suddenly brought the operations of this colliery to a standstill. They have not since been resumed.

RICHMOND COUNTY.

Many licenses to search were taken out in this county during the year, and it is said that the Northerly extension of seams, supposed to be indentical with those of the Sea Coal Bay, have been proved in several places, but I have no reports to confirm the statement.

HANTS COUNTY.

A small seam about two feet in thickness has been discovered cropping out in the Kennetcook river, and dipping to the South at an angle of 40 degrees. The seam probably belongs to the lowest beds of the coal measures, and although of no present commercial value, may be so as a guide to further explorations, which, as the measures appear much disturbed, must, to have any likelihood of success, be systematically made. At the place of discovery the thickness of the overlying measures can be but a few hundred feet, as rocks of the Lower Carboniferous are seen dipping in a contrary direction on the opposite banks of the river.

GUYSBOROUGH COUNTY.

In this county also there appears to be an outlay patch of the lower coal measures, and at the head of Country Harbuur some thin seams are said to have been found, but no indication of a workable has yet been discovered.

GOLD MINING.

The condition of this branch of the mining industry has maintained much the same position it occupied when reported on last year.

A further decrease in the total yield is noticeable, partially to be accounted for, perhaps, by the general demand for miners throughout the country and the rise in the rates of wages. The Returns from several mines, as those of Lawson at Montagu, Donaldson at Oldham, and the Eldorado Co. at Wine Harbour show highly satisfactory yields.

No changes from those of last year have to be noted in the methods of working the mines, the tribute system being most general. In the last report reference was made to the introduction of this system of mining, by which working miners are enabled to utilize their knowledge and labor to the greatest advantage. It is undoubtedly the best adapted to foster a true mining spirit. As far as possible it should be encouraged, and few official obstructions put in the way of working men willing to venture their labour in mining speculations. At the same time it should not be forgotten that the men of this class are almost always without the capital requisite to open the setts as thoroughly as even they themselves would approve of doing had they adequate means; but for the supply of their immediate necessities they are compelled to extract quartz as speedily as possible, and get some return for their labor. The system, as at present conducted, is only adapted for surface workings and where the water is light. It is attended by this great disadvantage, that the tributers interest in the property they work being merely temporary, they leave the small shafts and slopes imperfectly stowed and secured, in consequence of which rupture of the walls sooner or later taking place allows free access for the infiltration of surface water. This admission of water is not of so much importance when the depth of the workings is shallow, but most serious when great. In most cases it ultimately leads to abandonment, due either to the want of capital necessary to erect pumping apparatus, or because

the expense incurred by pumping becomes insupportable. Unfortunately this country is exceedingly wet and comparatively speaking, level, so that adits for unwatering a district can seldom be resorted to, and pumps have generally to be used. When mines have been abandoned and allowed to fill with water, much expense is entailed on the workers of leads in adjoining areas on account of the water, which finds its way down from the denuded outcrops and through the shattered rock. Were lessees to require proper attention to be paid to the protection of the outcroppings of the leads, either by requiring them to be left unwrought, or the excavated space to be well packed, and the walls kept from falling together, much of this trouble might be avoided. The lessees could make such stipulations with the tributers, and their agent on the ground could see them carried out.

Most of the claims are held in small areas, and while they are so, companies cannot work to advantage. Capital might perchance, however, be profitably invested by being more particularly directed to supplying efficient machinery to do the hoisting and pumping. The leads so drained and made workable being divided into setts and worked by tributers at rates proportionate to the value of the quartz previously extracted from each sett.

DISTRICTS.

Stormont.—Work was abandoned early in the year and has not yet been resumed. Miners have, however, not yet lost faith in its mines, and look forward to the speedy renewal of operations.

Wine Harbour.—The Eldorado company during the greater part of the year, obtained very satisfactory returns from the Plough lead. They are now continuing the sinking, as their endeavors to find the continuation of the lead to the east of the fault proved ineffectual. On the adjoining area, F 4, Mr. McIntosh opened the western extension of the lead, but which on account of the poverty of the quartz he had to abandon. The company also extended the main tunnel until it cut the Mitchell lead 70 feet from the surface. Work was also performed on the Norton and Hattie leads.

The main lead at the Barrasois on the Orient and adjoining properties, areas 2 and 18 Block 6, has been re-opened and worked.

A sample of 32 tons of the best tailings from the Eldorado mill, yielded 1 oz. 13 dwts. 12 grs. of gold and 4 lbs. of mercury, equal to $34.65, at an expense of $28.15.

Sherbrooke.—The production of gold in this district was in excess of the previous year. The principal workings being on the Dewar lead in areas 651 and 652 to a depth of 250 feet. The continuation of the lead as far as area 625 has been stripped and as the stopes over this extent have been but imperfectly stowed, a crushing in of the hanging walls, and free admittance of much water, resulted. The lead where it is worked, underlies areas 621, 622, 623, and 653. Mining on this lead was, for a time in the autumn stopped, owing to the destruction of the engine house by fire.

Mining on the leads of the New York and Sherbrooke Company's property was abandoned in August, after four years continuous operation. The main shaft on the South lead, which starts in area 641, enters a depth 20 feet area 611 about midway between the side lines, and terminates at a depth of 300 feet. The stopes on the west side being 25 feet deeper than the shaft, while those on the east are not so deep. The north lead was abandoned when the shaft attained a total depth of 250 feet.

On the Hayden and Derby property, the adjoining area to the south, the lead discovered and opened the year before by Mr. West, was steadily worked, and the stopes, which he carried down 150 feet in width have reached a depth of 90 feet.

The tributers who the previous year took the Palmerston property, continued to work the lead then opened in area 747 and other parties have worked its extension in areas 749 and 750. The lead thus worked is very irregular in thickness often swelling out in the 'rolls' to two feet in width.

Other tributers worked on the Stryker lead, area 751, and on the adjoining properties to the east, the Canada and Caledonia, with various success.

Harrigan Cove.—Operations were here abandoned early in the year, and although the prospecting had given fair promise of success, the renewal of work has been indefinitely postponed. At Shear's Point, nothing further has been done.

Fifteen Mile Stream.—Attention was again directed to this locality, and the tributers who worked are reported to be satisfied with their prospects. They are preparing to erect milling and pumping machinery.

Tangier.—Mr. Forrest continues to be the principal operator in this district. His tribute right on the Tangier Company's property terminating, he ceased working the South lead when the shaft had reached a depth of a 100 feet and the stopes a width of 300 feet, the Little South lead at the depth of 60 feet with stopes 200 feet wide, and the North lead when at a depth of 35 feet. The latter is 80 feet distant from the South lead, and this last from the Little South lead 16 feet, on the small claims numbered 100 to 179.

Some slight excitement was produced in the summer by tributers on the Field lead near the river, striking a rich piece of ground. After the mine had been opened on areas 72 to 84, to a depth of 60 feet and on a length of 200 feet, work was suspended for the winter. The promises held out by this lead induced others to prospect on its continuation across the river, and favorable surface indications were met with.

The Strawberry Hill Company in the beginning of the year sank the main shaft some 12 feet deeper, or to a total depth of 164 feet. The lead, only about one inch thick, yielded nearly one ounce of gold to the ton of quartz, but not sufficient to warrant a continuation of the sinking. They then did some surface prospecting, and drove a tunnel across the leads some 62 feet, but proved nothing satisfactory. Work was then abandoned on the Hill until the autumn, when tributers took Froud's property and discovered a new lead 7 inches thick on areas 233 to 235. They were fortunate in striking the lead, as the 'throw' was fully one hundred feet to the south. So promising does this new lead appear that other parties are opening the extension of the lead

on areas 231 and 232. At Mooseland, Mr. Irving continues to work the same ground he had opened the previous year.

Gay's River.—Mr. McDonald has continued his drift to the deep, following the line of Junction of the slates and conglomerate and removing the softer material in immediate contact with the bed-rock, throws into the waste the large boulders that compose the greater part of the deposit. A large quantity of material has consequently to be handled for the moderate yield obtained.

Waverley.—Messrs. DeWolfe abandoned all work early in the spring. In the autumn the property containing the Union lead was let to tributers, who worked it to a small extent.

The tributers who last year took the American Hill property from Mr. McClure, continued to work steadily. They sank the main shaft to the depth of 230 feet, and on the top of the hill erected a pumping engine.

Other tributers took hold of Wilson's areas on Laidlaw's hill and drove a tunnel to drain and work the well known barren quartz of that locality.

Oldham.—Early in the season Mr. Shaffer ceased to work on the Richey lead and that with the mines in the adjoining properties have since remained unwrought.

Some tributers opened the Hall lead and for some time worked with success. Their operations were, however, but of a temporary character.

Mr Donaldson increased his facilities for extraction by the erection of a 10 inch cylinder horizontal engine as a substitute for the small portable engine previously used. The engine drives by wooden friction gearing the winding drum and also two 3½ inch pumps. Much water has to be contended with as the rock is open and the surface very swampy. The main pumping shaft has been sank to a depth of 130 feet. Three new drawing shafts have been put down to the west and the exploitation in that direction continued by a tunnel driven under some 20 feet of cover. In working to the west and to the deep, the land has been found to thicken from one to five inches and the quartz to be enriched yielding 4.17 instead of 1.16 oz. per ton.

Montagu.—Mr. Lawson, with his customary vigor, has continued sinking the Albion main shaft in the hopes of again striking a shoot of rich quartz. He has now reached a depth of 300 feet, but has not yet struck paying ground. The mining to the west of the barren ground has proved profitable, and it is the extension of this shoot in an oblique direction that will, it is expected, be struck in the main shaft. In the mill he has adopted the use of blankets, which, if they do not collect more amalgam than the plates, aid, at least, in collecting the auriferous pyrites; and as the pyrites are rich in gold, prove of value.

Renfrew.—Mr. McClure trenched some new ground in the eastern section of this district and exposed numerous leads, but none of which did he find promising.

Uniacke.—A few tributers worked in several places about the district, but with no great success.

IRON MINING.

Neither of the established iron works were kept fully employed. The Intercolonial Iron and Steel Co. reduced their production pending the transfer of their property to a new company who, it is expected, will erect furnaces on a part of the estate adjacent to the Intercolonial Railway where coal and coke can be readily obtained from the collieries of Spring Hill and Pictou.

The Annapolis Iron Works at Clementsport were again started, and the furnace run for some six weeks. The ore used is taken from the Potter and Miller Mines, and is mixed with a certain per centage of bog ore from Bloomfield.

The following table shows the production of ore and pig metal at both establishments :

Iron Works.	Men.	Ore mined.	Ore smelted.	Pig metal.
Acadia	26	2947	2091	1046
Annapolis.....	16	538	630	180
Total.....	42	3485	2721	1226

In the Pictou Iron field further prospecting was made near Springville, and the bed of Blanchard ore traced in an irregular course to the river. The limonite deposits by the river were also to some extent proved to be continuous. No preparations, however, have yet been made to mine these ores which undoubtedly exist in great quantities.

The explorations on the Indian Reserve near Whycocomagh proved, it is reported, the bed of ore to be about 15 feet in thickness for a distance of 1000 feet.

Other prospecting for iron ore has been made on the strike of the Londonderry vein toward Five Islands, and in strata of the same age back of Cheverie where ore, like that of Londonderry, is said to have been discovered.

The Nictaux beds still remain unworked.

LEAD.

Attention was again turned to the deposits near Gay's River, but the explorations as far as made did not prove of value. Galena is also known to occur near Stewiacke, Arichat, Sydney and Baddeck. A peculiar deposit is met with near Arisaig. Fragments of calamites with the tissue infiltrated with galena and iron pyrites are found on the outcropping of a sandstone bed, from the denudation of which, doubtless, the metalliferous fossil plants have been derived.

COPPER.

Much interest was again taken in the search for copper ore near Polson's Lake, and in following up the 'float' a large fragment from the vein was struck, which at first was supposed to be part of the outcrop. On discovering the mistake, the explorations were for the time stopped, although it might naturally be surmised that the vein is not far distant. The depth of surface soil greatly retards the work of exploration.

PLASTER, FREESTONE, &c.

One of the appended tables shows the Plaster trade for the past two years and the increase that has taken place in the quantity shipped and the value of the material. This industry is becoming of more and more importance.

The quantities of freestone, &c., noticed, do not represent the total trade of the country in these minerals, but only of the ports mentioned. It would be of general interest to know what the whole quarry business is, and owners are solicited to send information respecting it to the Department.

ACCIDENTS.

The year 1873 will be ever memorable in the history of our coal mining as the one wherein occurred the first serious disaster, occasioned by an explosion of gas, resulting in greater destruction of life and property than any similar occurrence that ever happened in any mine in America.

I have thought it sufficient this year to publish the list of fatal accidents only, and merely to mention that besides those which resulted in the death of seventy-three men, twenty-four accidents were reported as having caused the maiming or injuring of thirty-one other persons.

In the following tabular statement the relative position which the mines of Nova Scotia bear to those of England and Pennsylvania is shown. Comparatively it is unsatisfactory even when the averages are computed without taking into account the loss of life occasioned by the Drummond explosion. It shows the indubitable necessity for greater attention being paid to the subject; more especially since it has been demonstrated that care has much improved the condition of English mines:

	England. 1872.	Pennsylvania. 1872.	Nova Scotia. 1873.
Produce in Tons - - - -	123,393,853	18,929,263	1,051,467
Persons employed - -	418,088	70,000	4,362
Fatal accidents - - - -	894	- - -	13
Lives lost - - - - - -	1,060	222	73
Averages:			
Persons emp'd per accident	468	- - -	315
" " " life lost	394	315	59
Tons raised per accident -	138,024	- -	80,882
" " " life lost -	116,409	80,762	14,403

TABLE OF FATAL ACCIDENTS.

No.	Date.	Name.	Colliery.	Cause.
1	March 15....	John Taylor.....	Vale.....	Fall with tub in Slope.
2	" 29....	Alexander Ryan.....	Lingan.....	Fall of coal.
3	May 5.....	William Andrews.....	Gowrie.....	Fall of coal.
4	" 13.....	John Dunn and 59 others.. (*See Appended list.*)	Intercolonial. (Drummond)	Explosion of gas.
5	July 16.....	John Neville.....	International.....	Crushed by train.
6	" 18.....	William Turnbull.....	Vale.....	Fall of derrick.
7	August 14...	Joseph McLean.....	International.....	Crushed by train.
8	" 29...	Donald McKinnon.....	Albion Mines.....	Fall of coal.
9	October 23 ..	Charles Martell.....	Caledonia.....	Crushed by wagons.
10	" 28....	James Kingou.....	Acadia.....	Fall of coal.
11	November 1 ..	John Downie.....	International.....	Run over by train
12	" 22	Daniel McDonald..... William Hendricken.....	Vale.....	Crushed tubs in slope.
13	" 27	Malcom McIsaac.....	Albion Mines.....	Crushed by back balance.

LIST OF LIVES LOST BY THE DRUMMOND COLLIERY EXPLOSION ON THE 13th MAY, 1873.

MARRIED.—James Dunn, *manager;* Joseph Richardson, *overman;* John Bowens, *deputy;* John Bennett, George Burney, John Campbell, Colin C. Chisholm, James Dalling, Robert Dunbar, John Dunn, Philip Dunn, John T. Elliott, John Ellis, John Emery, Henry Freeman, Hugh Gillis, Samuel Hale, John McElvie, Sr., Hugh McGillivray, Hugh McDonald, David McNeil, John McNeil, Jr., James McPherson, Jr., James Ramsay, Angus Smith, and John Walton, *miners:* Roderick McCharles, *carpenter;* Andrew Collin, *volunteer fireman;* Edward Burns, Thomas Glenwright and Abraham Guy, *volunteer miners.*

SINGLE.—Timothy Howatt, *volunteer;* Archibald Cameron, Kenneth Cameron, Harvey Campbell, William Elliott, John Fraser, Duncan Halliday, Matthew Lyall, John Manning, Daniel J. McDonald, Duncan McDonald, John McDonald No. 1, John McDonald No. 2, Colin McDonald. John McElvie, Jr., Oliver McLeod, John McRichey, Duncan McRae, Alexander Murray, Nicholas O'Brien, Alexander Purvis, Jr., William Rodgers, Edward Ruddick, Donald Shaw, John Sinclair, D. McFarlane Stewart, George Stewart, and James Webb, *miners;* Edward Jones, *boy.*

CAUSES OF ACCIDENTS AND LIVES LOST.

Explosions of gas, 60; falls of coal, 4; falls in slopes, 3; crushed on surface railways, 4; miscellaneous, 2; total 73.

EXPLOSIONS OF GAS.

Accident No. 4. It is my painful duty to record under this head the occurrence of a lamentable disaster at the Drummond Colliery of the Intercolonial Co. on the 13th May. In a previous part of the report reference is made to the condition of the mine at the time of the accident. The following is a summary of the evidence recorded by the Coroner, as deduced at the inquest on the body of John Dunn, a miner.

DRUMMOND COLLIERY EXPLOSION.

Inquest, held at Westville on Wednesday and Thursday, May 14th and 15th, 1873, before the Coroner Dr. Johnstone, and a jury of 12 persons. Mr. Poole, the Government Inspector of Mines, was present, and Mr. Rutherford watched the proceedings on behalf of the owners of the colliery.

The Coroner.—Addressing the Inspector :—"I have secured the services of Mr. J. W. Carmichael as foreman of the jury, and although two or three of the jurymen are in positions that would prevent them serving, were the Mines Regulation Act now in force, I think you will find them honest men who will faithfully do their duty." No objection being raised, the Coroner called

Thomas Lowther, who said: "I am the overman at the Black Diamond Colliery worked by the Nova Scotia Company. While sitting at dinner on the 13th inst. I heard the noise of a slight explosion. Being told by one of our men that an explosion had taken place at the Drummond Colliery, I proceeded to the scene of the disaster and about one o'clock entered the mouth of No. 1 slope. When I got down about 100 feet I found the stopping in the heading into No. 2 slope blown out and the smoke so thick that I returned, got some brattice, and with six other men again went down. While at work we heard the groans of men further down the slope. We pushed on, got hold of one man, but were so overpowered by the smoke that we had to leave him, and with difficulty made our way to the surface. Shortly after we got up she blasted the second time."

Alexander Lorimer."—I am night fireman at the Drummond Colliery. My duty is to see in the evening, when I go down, that the men have left no fire in their bords, to examine the state of the mine before the men come down in the morning, and to meet the men at the cabin and give those of them safety lamps whose places require their use. I have been night watchman for about 10 months and am well acquainted with gas, having been brought up in old country mines where there was a good deal of gas. On the 12th May, I went down the mine between six and seven in the evening and examined all the places. In several

bords I found gas lying, as was not unusual. and I informed the men, as I always did, who worked in those bords, and gave them their 'sulphur' lamps. The mine was in as good order as usual that night, and during the short time that the strike lasted the ordinary ventilation was maintained and no gas allowed to accumulate. In the morning I found a little gas lying in the lowest level ou the South side, but not any in McLeod's (the adjoining level above) where the brattice was within 15 feet of the face. Boards with the word 'danger' painted ou them are put in all unsafe places not in use. and strange workmen (new hands) are forbiddeu to enter the bords unless miners are with them. I have known men burned in consequence of disobeying this regulation. After the explosion occurred I returned to the mine and went down the pumping pit about two o'clock, having heard cries for help, and assisted John Bennet to the surface. James Hunter, who went down with me and remained at the bottom, came up in the next tub, bringing John Dunn who was very badly burnt. Edward Burns then went down with Timothy Howatt, aud was in the act of coming up to report on the condition of the bottom of the pit wheu the second explosion caught him and hurled him to the surface, dead. I was unable to get quite to the bottom of the pit, as rubbish filled it up above the door heads. I helped Bennet clamber up among the timber."

James Dunstan.—"I am a cutter, and I went to work on the morning of the 13th inst. after an intermission of a few days. My bord is one of the upper bords of the lowest lift on the South side. Between 11 and 12 o'clock I got word that McLeod's level was ou fire and that all hauds were required to assist in putting it out. I went at ouce to the face of McLeod's level and helped to work at the fire, by throwiug water and beating at the flame with wet bags, but we could do little as the smoke soon sickened us. We tried again, but were soon driven back. Joe Richardson then came and ordered all who were unwilling to assist any further to leave the pit. He at the same time led about twelve men through the lodgment iuto the low level to get at the fire from the main intake. Others of us rushed into the level and rescued three men who had fallen overpowered by the smoke, when Joe, who had come out to get breath, told us who remained to 'try and get those men out.' Joe went back to the fire and

I waited at the mouth of the lodgment to help men up when they came out to take breath. Mr. Dunn then came along and asked where Joe was. I said, he has just returned into the level. Mr. Dunn said no more but left immediately for the slope. Just then she blasted. I threw myself down in a gutter and crawled to the lodgment, as I found I could not stand in the baffling air. When things became more quiet I made my way toward No. 1 slope, but found No. 2 choked with rubbish. The door leading into No. 1 slope I could not open; hearing some one speak on the other side I called out, but received no answer. Nearly exhausted I made my way back to the lodgment and called up the pumping pit. A tub was lowered to me and I went up. The air at the bottom of the pit was good. If men had immediately obeyed the order, that all who could give no assistance should leave, they would have had plenty of time to escape, as, I believe, the alarm was given to all hands. We are given about five pounds of powder at a time, and have to go to bank for more when required. As far as I am aware the pit was well ventilated, and to the best of my knowledge Joe Richardson always exercised great care in the management of the pit."

Robert McLeod.—"I went to work on the morning of the 13th inst., in the main level, No. 2 slope. The night fireman told me, as I was going in, that there were about 15 inches of gas in my place. (Lorimer said that he did not find any.) I found only six inches, and that on the high side. The brattice being close, there was less than usual. During the morning I fired two shots in the fall, and neither set fire to the gas. At about a quarter to twelve, I fired a shot in the bench on the low side. It did not blow well and the gas caught fire. We battled with the fire for about fifteen minutes, and had then to retire for fresh air. When we endeavored to return, we could not for the smoke. Joe Richardson, who then came along, said he would go in by way of the lodgment. We went with him and found the fire had caught the brattice. Joe sent me back to tell the man to start the pump, but who could not for the smoke. I returned, and was again sent out to send for Mr. Dunn. I did so by some boys going up in the rake and Mr. Dunn came down when the same rake returned. Joe, who had by this time got back to the lodgment, told me to call the men who were inside, (*i. e.* working on the north side), 'as it

was a lost case.' I did so, and started immediately up the No. 1 slope. At the bottom, I met Mr. Duun going in, and I told him I feared the pit was gone. When within 200 feet of the mouth, I felt her suck, (the air draw down), and throwing myself down, caught hold of the rail and so resisted the force of the blast. Some of the men ahead of me, were blown away by the blast. One of the men, I know, was my brother who was lost. I was assisted out by a man who came out of the No. 1 top lauding."

In answer to the Inspector. "I always tried, as well as on this particular occasion, with my safety lamp, whether there was any lying gas, before I fired a shot. The gas has frequently caught fire from a fall shot, but only ouce before from a shot in the bench. I uever had a shot to operate as the last shot did, that is, blow the coal in the back of the bench and not lift the front from the pavement. Had I been able to shovel away the coal from the face, I could have easily put out the fire. As the pit had been standing there was less water than usual in the barrels, but I have little doubt that the barrels would have been filled in the course of the day. (See A. McLeod's evidence.) About two months previously, Joe said there must be no more powder used in my level, as the day before the low level had caught fire from a shot. I replied, "that I would not work there then." He theu told me to go ou using it as he had no authority to say that I should be paid extra for wedging. I did not consider it unsafe to use powder, and I never said anything to Mr. Dunn on the use of powder in my level. In the low level powder was prohibited, and in both levels safety lamps were alone used. Before I left the level the first time smoke was backiug down against the air."

In answer to Mr. Rutherford. "I have been employed in the Drummond mine, with the exception of sixteen mouths, ever since it commenced operations. I am perfectly acquainted with the use of the safety lamp as indicating gas, aud have alone used it since my brother Andrew has worked with me. In my opinion, Richardson was a very careful man about the mine."

Andrew McLeod.—"I am a brother of Robert McLeod and was employed by him as his loader. We went down the pit about

half-past six on Tuesday morning, and the fireman handed me a sulphur lamp. We never worked with naked lights. On firing the third shot that morning the place took fire. All three of us worked hard for over a quarter of an hour, we then called for help, Two men came, I think Alexander Purvis was one of them. I was soon done out, and in a little while, as they could not succeed, we all went out to the landing. There were two barrels of water not far from the face, one full and the other half-full; there was also a sump with plenty of water, about 100 yards from the face. The only time that our level caught fire, since I have been working, was about six weeks ago when my brother put the fire out himself with his shirt. As I came away, I heard Joe direct to have all the men and horses out at once. I travelled up No. 1 slope and had just reached the mouth when the explosion occurred and I was knocked down."

This witness being young and inexperienced, was unable to give satisfactory replies to many questions put to him.

George McPherson.—"I am a coal cutter. I was working at the time of the explosion in the old top landing, No. 1 slope. There was nothing wrong with our bord, nor did we observe anything unusual when we went to work. We heard no alarm, and the first intimation we had that anything was wrong was the first blast which threw us down and put out our lights. We lit our lights and made our way along the top level to No. 1 slope. We found the timber torn away in the slope, the track smashed up, and the air very bad. Much smoke and heat made it hard to get along. We passed one man, whom I did not know, lying dead. Immediately afterwards the smoke cleared away and I saw a man a bit above us who proved to be R. McLeod. He was lying down and unable to rise. I helped him up the remainder of the way, my comrade being unable to give him any assistance!"

Adam Lorimer.—"I was at work on the morning of the 13th inst., as a coal cutter, in a bord in the lower lift workings on the north side. One of the deputies, Jack Bowens, ordered us to help to carry water to put out the fire which had kindled in McLeod's level. We went immediately and at the mouth of the landing of No. 1 slope, we met about 30 men who were standing talking. They allowed that the pit was on fire and that it was

useless our going in. My brother and I then turned back to our bord to get our clothes. We told some men we met that the pit was on fire and all were warned to leave. Just as we reached our bord, she blasted, and we were knocked down but were uninjured. We found our way without lights up the gin-slant to the middle level and out on to the middle landing of No. 1 where we found the slope obstructed with tubs and rubbish. Crawling over the rubbish we came upon a number of men lying about, unable to walk, crying and groaning. We stumbled over some of them, but said nothing to them as we with difficulty made our way in the bad air. I think the men we passed were those we left talking at the lower landing when we turned back for our clothes. My brother helped me up the slope to nearly the top when he too became exhausted. I, finding I could go no further, said, 'Go, save yourself if you can and send me help.' Help came, and I was the last man to leave the slope, alive.

Edward Small.—"I was a shiftman at the Drummond colliery, and at noon on the 13th inst., was on my way to the furnace to eat my dinner, when I met Purvis and D. McNeil, who told me to return as McLeod's level was on fire. Purvis gave me two safety lamps and I went down. At the pumping pit we passed 20 men standing; we went through the door but could not get far as there was too much smoke. The brattice was then on fire. Bowens came along and told us to come round by the lodgment and get to the fire that way. We went back and met Richardson who said, 'Men follow me.' Joe (Richardson) sent me to the surface for more bags and buckets. I went and was prepared to go down again, when two other men came up and said, I was to help them take off the upper length of pipe in the pumping pit that the water falling back might increase the current of air. We took it off and called down to start the pump (a Cameron steam pump) but received no answer from below. Just then the explosion took place.

John Lorimer.—"I am a coal cutter at the Vale Colliery. Previous to three weeks ago I worked at the Drummond and in the low level, next McLeod's. For the last month before I left I did not use powder but before that I did. I was prohibited from using it because it set the place on fire every time a shot was fired. I

at the same time said I would not be responsible for using it, and the overman told me not to use it. I made less wages after I had ceased to use powder, being paid by the shift instead of by the yard I left because they would not give me the rate per yard that I asked. I considered McLeod's place was as dangerous a place to use powder in as my place was. When I stopped working the faces of both places were about square to one another. Sometimes I had much trouble in putting out fire after a shot, sometimes I was twenty to twenty five minutes. I had been the deputy overman three and a half years, but differed with Richardson and took the picks about two years ago. To speak candidly, I was fond of a glass."

By Mr. Rutherford.—"I consider the pit was well managed, There was always plenty of water and appliances provided for putting out fire. The sump was in the upper level but was handy for both levels."

Samuel B. Coxon.—"I am a Mining engineer of the County of Durham, England, one of the Directors of the Halifax Company who have lately taken possession of the Albion Mines I believe I have as large an experience in mining operations as any man in England. I arrived at the Drummond Colliery about 2 p. m. on the 13th inst. and found dense volumes of smoke issuing from the natural exits of the mine, precluding the possibility of saving life by means of those exits. Hearing that cries for help had been heard from the pumping pit, Mr. Hudson and I went there. On our arrival we found one man, (James Dunstan) being hauled up in a bucket by manual power. After which, other two were drawn up. Then four volunteers descended to prepare the way for larger gangs of men to search for any who might yet be alive in the mine. Mr. Hudson and I had determined to explore the pit with the hopes of saving life, and were waiting for our safety lamps and the report of the volunteer Burns as to the state of the bottom of the pit, when, as Burns was being drawn up, one of the most terrific explosions I have ever seen took place, casting up the man and the bucket and overthrowing the gin and parts about the pit. The plan of the workings which we were studying at the time, was torn in our hands by the

falling debris. After witnessing this explosion and the subsequent ones, I became convinced that every soul in the mine was lost, and to pursue further investigation in the mine was utterly useless. I then consulted with the other mining engineers present, as to the best and quickest mode of recovering the bodies, extinguishing the fire, and saving property. We, with one consent, determined to inundate the mine, which we attempted to accomplish by diverting the neighbouring brooks and applying every available volume of water. After further consultation, it was determined, that the most effectual means of checking the fire, was by closing all the downcast approaches to the mine which carried air to the flames. This we commenced to do after telegraphing to the Government Inspector of Mines for his authority. I have heard the previous evidence and am led to believe that the third shot fired by McLeod must have set fire to a heavy feeder of gas. As I never was in the mine, I cannot say that it was not safe to use powder in McLeods level. I think that the provisions of the new Mining Act, with regard to the use of powder, are not more stringent than has hitherto been the practice in the North of England, where a properly authorized person fires the shots, and he alone; he having first examined the place and adjacent places with a safety lamp."

Much of the above evidence was given in reply to questions put by the Inspector and the Foreman of the jury

The jury after a short deliberation, rendered the following verdict:—"That the said John Dunn, came to his death on the 13th inst., from an explosion of gas, in the Drummond Colliery, caused by the derangement of the ventilation of the mine arising from a fire in Robert McLeod's level. We consider care was exhibited in the working of the mine; but we desire to express our regret that powder was permitted to be used in the level worked by Robert McLeod.

As the verdict states, it is truly to be regretted that the use of powder was permitted in the level worked by Robert McLeod. There cannot be a doubt but that the use of powder was the primary cause of the explosion, and the evidence, which is wonderfully full and complete, considering the magni-

tude of the disaster, leaves little room for doubt but that the direct cause was either the ignorance or carelessness of the miners who were working in the level at the time. While we now know that the risk run by the use of powder was exceedingly great, it must be remembered when considering on whose shoulders rests the blame of the occurrence, that its use is general throughout the Province, except in the Foord pit, where the danger is peculiar on account of the liability of cutting heavy feeders of gas; further, the use of powder lessened the cost of production to the Company, and was not only not objected to, but required by the miners; and above all, there was then an *entire absence of legal prohibition.*

It should be also borne in mind, that competition had previously been sharp, prices low, and at the time the minds of the colliers were disturbed by the condition of the trade in England, and the high rate of wages there ruling. In short there was every inducement for so energetic a manager as the late Mr. Dunn to suppress any prudential fears he may have entertained, and run risks which he hoped by care and attention to divert from leading to serious accidents. The evidence at the inquest goes to show that the general arrangements for conducting the system of working adopted, were good, and although doubts on some points seem to have been held by Richardson, it would be manifestly unjust to impute either rashness, want of skill or care on the part of the manager because the use of powder was permitted. He was well aware that the mine was fiery and required exceptional care in its management, and while his arrangements were prepared to meet all ordinary contingencies arising from the proper use of powder, they could not be for its gross misuse in the hands of workman presumably skilful: men of whose good judgment on the occasion in question grave doubts may to say the least be entertained. To me it appears evident that through carelessness or a desire to save labour either the bench was not properly sheared on the low side, or the line of least resistance was misjudged and the hole for the shot bored too far from the face of the bench, Had it been otherwise the bench would have been lifted from the pavement and the coal so shaken that it could readily have been removed

and a direct attack made on the place where the gas issued from the solid coal. McLeod in his evidence states that:—"The gas has frequently caught fire from a fall shot but only once before from a shot in the bench. I never had a shot to operate as the last shot did, that is, blow the coal in the back of the bench and not lift it from the pavement, Had I been able to shovel away the coal from the face I could have easily put out the fire."

The cause of the fire has been clearly shown by the evidence but what caused the untimely explosion? I am led to believe from the following reasons that the seat of the first explosion must have been to the rise of the middle level on the south side. The blast out of No. 2 slope was of double the force of that out of No. 1. To the deep, where the fire originated, Dunstan came out alive and little injured, and several of the men working at the fire, also must have made their way to the bottom of the pumping pit after the first explosion. While from the north side two pairs of men, from the extreme rise and extreme deep workings escaped unhurt. For some time before the explosion occurred smoke was seen coming out of No. 2 slope, and when the fire in McLeods level got strong the men working at it noticed that the air backed down into the level. It would therefore seem that No. 2 slope acted as the upcast from the fire, possibly by a door having been left open, and the pumping pit as the downcast; while the furnace was supplied with air by the overcast from the north side. This would cause the ventilation of the middle and rise workings on the south side to be checked and afford an opportunity for the accumulation of gas and the formation of an inflammable mixture, which, at length coming in contract with the furnace fire, would cause the first explosion. The second and subsequent ones were the natural consequences of the first. The first explosion having blown out the stoppings, the direction of the air current would be no longer controlled to course the workings and dilute the fire damp generated at the face; and the gas again accumulating, at length come in contact with the fire, and cause the second explosion. The concussion would extinguish the flame where the coal was not set on fire, and explosion would follow explosion until the flame spread throughout the workings and ignited every feeder of gas. The quantity of which given off must have

been enormous to produce such terrific explosions so rapidly, and even the ordinary current of air, had it existed, after sweeping the faces on the south side would have been vitiated to a great extent. The quantity of air ordinarily circulating would probably amount to 20,000 feet per minute.

Several minor explosions occurred during the year which resulted in the burning of one or more men on each occasion; all happily unattended by fatal results. These explosions occurred at the Acadia, Caledonia, Lingan, Vale and Victoria Collieries, and were, according to the reports, due without exception, to individual carelessness or laxity of discipline, and on no occasion to sudden outbursts of gas or unaccountable causes.

In my last annual report I mentioned the reluctance shown by some agents to send to the Department reports on accidents. This reluctance is still noticeable, and I have had on several occasions to remind agents that it has been customary hitherto to send forward such reports. All my applications for information regarding particular cases met with a ready response on all except one occasion, when no notice was taken of my written request. A subsequent conversation with the agent led to an explanation of his course, and it appeared that knowing he could not be made to suffer for his refusal, the new Mines Regulation Chapter not being then in force, he considered he was justified in ignoring my right to make the application, and in declining to acknowledge in writing that gas had been allowed to accumulate during working hours in his mine to the peril of the workmen engaged therein. Or, in other words, to allow it to be supposed that the ventilation and discipline of his mine were not quite perfect. There is a natural desire on the part of agents having a professional reputation to maintain, to keep secret all delinquencies or occurrences likely to reflect on their credit. The knowledge that hereafter every failure from compliance with the spirit of the Act will be made public will, I trust, induce all in responsible positions to strive to fulfil its requirements. I am convinced that in this country accidents of this class are, except in rare cases, quite inexcusable, and that a little increased care will reduce them to a minimum.

EXPLOSIONS OF POWDER.

Happily of the accidents reported to have injured some six men by explosions of powder, none terminated fatally, although some of the men wounded were severely burnt. At the Albion gold mine, Montagu, a charge that had missed fire exploded when an attempt to draw it was made and seriously injured two men. The attempt to unram a charge that has missed fire is now interdicted by the Mines Regulation Act, and subjects the transgressor to penalty.

At the Caledonia Colliery an accident resulted from the use of an iron stemmer to ram the first part of the tamping, by which the unfortunate miner lost his eyesight, beside suffering severe burns about the face. The mining law of Great Britain does not permit the use of iron stemmers for this purpose.

FALLS OF COAL.

The fatalities of this class were of the usual character and immediately arose from the oversight or negligence of the men who themselves suffered; due either from failure to sustain or pull down loose coal while working about it. Seven accidents were reported, four of which terminated fatally: Nos. 2, 3, 8 and 10. No. 2 Alexander Ryan was completing a holing, cutting away the "bridge" or "stump" as it is sometimes called, a piece of coal left to the last to support the overhanging mass, when the whole block came away suddenly and killed him instantly. On examination of the place a 'slip' was seen to run directly behind the mass which fell. No. 3 was a like occurrence at the Gowrie Mines. Had it been a rule of the collieries where these accidents happened that sprags must be used when finishing a holing, these casualties would probably not have occurred. But rules unless acted on are of little worth, as exemplified by No. 10, which resulted also from neglect to use sprags when holing as required at the mine where the accident happened. No. 8 is reported to have followed after a distinct warning of danger and instruction had been given respecting the timbering of the roof.

ACCIDENTS IN SHAFTS AND SLOPES.

Two non-fatal accidents were reported to have occurred in the inking of shafts. Two fatal in slopes. No. 1, is supposed to ave been in consequence of the man who was killed, pushing the ub beyond the mouth of the level and falling with it into the lope.

No. 12 was a much more serious accident which took place in he same mine on the 22nd November. Two strangers were admitted into the Vale slope without leave, and when attended by n irresponsible person met with the misadventure narrated in a revious paragraph headed, 'Special Rules.'

SURFACE ACCIDENTS.

The International Co. were singularly unfortunate in that three ccidents, Nos. 5, 7, and 11, resulting fatally, occurred on their ailway from Bridgeport to Sydney, from men falling off the train hile in motion. No. 9 happened at Port Caledonia. Some full agons getting started on an incline struck some empties, on ne of which stood Charles Martell, a man long accustomed to the hunting of the wagons on the wharf, but who on the occasion n question failed to notice the impending collision. On the agons striking, the empties jumped and the buffers overriding, e was crushed as the wagons came together.

MISCELLANEOUS.

No. 13. The only fatal casualty remaining to be noticed, reulted from the inattention of McIsaac, who in crossing the plane ay when working, was struck by the travelling counterbalance nd killed.

Two accidents unattended by fatal results were caused by oving tubs underground.

Colliery Accident Fund.—After an occurrence, such as that

at the Drummond, when the slaughter is wholesale, the sympathies of the people at large are with the families of the sufferers, and contributions of money are freely made for their relief. But when a single fatality occurs, and most of those which happen occur singly, the public attention is not drawn to the trials suddenly imposed on the widow and orphans and to their need of assistance. Beyond the temporary aid afforded by a local subscription, the care of her support is left entirely to her relations, who, most probably, are ill able to bear the additional expense. This system of alms giving is manifestly unfair, and tends to blunt the natural pride of a people accustomed to fairly earn their daily bread.

While still the recollection of the terrible disaster is fresh in the minds of our mining people, I desire to point out to them a system of relief that has been proposed in England, and partly carried out in South Staffordshire; which is, that each district should establish a district permanent insurance fund for the relief of sufferers by colliery accidents. The scheme adopted supplies the required aid as the payment of a just claim and not as a gift of charity. Consequently it meets with the approval of all classes interested and might surely be with advantage introduced into this province, where the inevitable law of averages has shown that a proportionate number of fatalities are here, as well as elsewhere, incidental to the growth of the coal trade.

It is proposed that each miner should make a weekly payment of say 1¼d., and each proprietor one farthing per ton on the coal sold. The proceeds of a fund so raised would, supposing the hitherto average rate of mortality is maintained, give to every widow, for a period of ten years, a weekly sum of 6s. 6d, and to each child 2s. 6d. per week.

The Central Committee appointed for disbursing the funds collected for the relief of the sufferers by the Drummond explosion, adopted the following scale for the present relief: To each widow $1.50 per week, and $1.00 per week to each child; girls under 15 and boys under 13 years of age.

Special grants were made of $200 to each widow of the four volunteers who were killed, and testimonials of the value of $50 given to each of the three surviving volunteers. With some of those who had claims on the Fund, they commuted, and altogether had expended by the end of the year about $8,800. There are now on the list for relief 27 of the 31 widows, and 80 of the 94 orphans, 4 fathers and 5 mothers left in distress by the explosion.

An abstract account of the subscriptions made for the Fund will be found published with the tables accompanying this report.

I have the honor to be,

Sir,

Your obedient servant,

HENRY S. POOLE.

The Hon. Daniel Macdonald,
Commissioner of Public Works and Mines.

LIST OF COAL LEASES IN THE PROVINCE.

No.	Lessee.	Colliery.	Area. Sq'r Miles.		Agent and *Manager.*
		ANTIGONISH COUNTY.			
1	McKinnon et al.....		3	Not working.	
		CUMBERLAND COUNTY.			
12	Cumberland Coal Mining Co'.....		4	"	
13,14,15	C. H. M. Black.....		3	"	
	General Mining Association.		4	"	
	Joggins Coal Mining Co....		2	"	
	Joggins C'l Min'g Association	Joggins	2	working.	Alex. Barnhill. *Robt. Redpath.*
11	Lawrence Company.....		1	not working.	
5	Lawson Company.....	Maccan	1	"	
1,2,3,4	New York and Acadia Com'y	Scotia..	4	working.	William Bennett.
6,7,8	Spring Hill Mining Comp'y	Spring Hill.....	3	"	*William Hall.*
9	Victoria Coal Mining Comp'y	....	2	not working.	
		PICTOU COUNTY.			
1	Acadia Coal Company.....	Fraser.....	1	not working	
3	" "	Acadia.....	1	working.	Jesse Hoyt.
19,21,22	" "	.....	4	not working.	
	Halifax Company, [Limited.]	Albion..... ..	4	working.	S. Cunard & Co. *James Hudson.*
11	R. G. Haliburton.....	.....	1	not working.	
13,14	Intercolonial Company.....	....	2	"	

LIST OF COAL LEASES IN THE PROVINCE. (Continued.)

12	Intercolonial Company.....	Drummond	1	working.	James Simpson.
6	Lewis R. Kirby.....	....	1	not working.	
15	Merigomish Co.....	.....	1	"	
10	Montreal and Pictou Co	.....	1	"	
23	Sir Hugh Allan, Kt...	Vale.....	3	working.	*John P. Lawson.*
25	Nova Scotia Co.....	Black Diamond.....	4	"	W. W. White.
20	D. E. Price et al.....	.....	2	not working.	
24	M. H. Richey.	.....	1	"	
		CAPE BRETON COUNTY.			
2	Thomas D. Archibald.....	Gowrie.....	1	working.	Blowers Archibald.
3	Blowers Archibald.....	"	1	"	
25	Thos. D. Archibald.....	Balmoral.....	1	not working.	
5,28	Block House Mining Co.....	Blockhouse....	2	working.	Robert Belloni.
29	" " *(sea area)*.....	.....	1	not working.	
15	Caledonia C. & R. Co.....	Caledonia	1	working.	David McKeen.
31	" *(sea area)*.....	....	1	not working.	
30	Alexander Campbell.....	.....	1	"	
44,45	Halifax Coal & Iron Co.....	Ontario	1⅓	working.	*John Sutherland.*
46	P. Collins.....	. .....	1	not working.	
66	Gardiner C. M. Co	Gardiner.....	2	working.	Wm. Routledge.
	General Mining Association.	Bridgeport.	2	not working.	John Rutherford.
	" " "	Sydney.....	5	working.	*Richard H. Brown.*
	" " "	....	12	not working.	

LIST OF COAL LEASES IN THE PROVINCE. (*Continued.*)

27	Gen'l M'ng Ass'n (*sea area*)	Sydney.....	5	Working.	*Rechard H. Brown.*
	" "	Lingan.....	10	"	*Donald Lynk.*
39	" " (*sea area*)	.. ..	5	"	
	" "	. ...	4	not working	
38	" " (*sea area*)	... .	5	"	E. P. Archbold.
4,12,16	Glace Bay Co.....	Little Glace Bay	3	working.	*Henry Mitchell.*
6,13,18,19	International C. & R. Co....	International	4	"	R. N. McDonald.
22	R. J. & J. L. Ingraham.....	. ...	1	not working.	
64,65	Lorway C. Company....	Lorway.....	2	working.	
68	" "	.....	1	"	*Albert J. Hill.*
69	" "	Emery.....	1	"	
10,21	J. Matheson	.....	2	not working.	
47	McInnes & LeCras.....	.....	1	"	
52,53	Hugh McLeod.....	....	2	"	
49	Gl'w & C.B.(N.S.) C.&R.Co	Reserve.....	1	working.	James Harvie, *George Scott.*
40,41,42	H. E. Ross et al.....	Pt. Aconi.....	3	not working.	
14,24	Schooner Pond Coal Co.....	Schooner Pond.....	2	working.	James Harvie.
43	South Head Co.....	South Head.....	1	not working.	
54 to 63	Sydney C Mg. Co. (*sea areas*)	....	10	"	
67	Weatherbe & Kirby...	....	1	"	
32	Wm. Sword (*sea area*)....	....	3	"	
34,35,36	Victoria Co. (*sea area*).....	Victoria.....	5	working.	Joseph Salter.
50,51	" " (*sea area*).....	....	2	not working.	

LIST OF COAL LEASES IN THE PROVINCE. Continued.

		INVERNESS COUNTY.			
5	John Evans Fredk'. Aylmer	Cape Mabon.....	2	Not working.	
4	Cape Breton Coal Min'g Co..	Port Hood.....	1	"	
10	E. D. Tremain, (*sea area*)...	.....	1	"	
11	Wm. J. Peppett.....	Broad Cove.....	1	"	
6	H. E. Ross, et al, (*sea area*)	.....	1	"	
7	" " "	.....	1	"	
8	Thomas Evans.....	Chimney Corner.....	1	"	
9	" " (*sea area*).	.....	1	"	
		RICHMOND COUNTY.			
2	A. E. Marmaud.....	Little River.....	1	Not working.	
		VICTORIA COUNTY,			
2	Charles J. Campbell.....	New Campbelton	3	working.	Lewis E. Tremain.
3,4	William Ross.....	.....	4	not working.	
	Total area	under lease.....	177 square	miles.	

COAL.—GENERAL STATEMENT.

1873.	Produce.	Sales.	Colliery Consumption
1st Quarter.....Tons.	217.327	38.231	26.366
2nd " ..... "	238.242	188.392	25.551
3rd " ..... "	307.954	414.434	25.850
4th " ..... "	287.944	240.049	30.631
Total.....	1.051.467	881.106	108.398
1872.....	880.950	785.914	110.341

N. B.—Stocks on hand at the end of the year, 106.000 Tons.

COAL SALES.

Markets.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year
	Tons.	Tons.	Tons.	Tons.	Tons.
Quebec	.....	70.161	107.940	8.958	187.059
New Brunswick	128	14.515	25.958	27.616	68.217
Newfoundland	1.994	12.195	22.332	19.340	55.861
P. E. Island.....	....	3.767	13.755	9.318	26.840
Nova Scotia....					
" Land Sales	22.422	8.010	7.891	22.639	60.962
" Seaborne..	4.349	28.905	60.006	61.073	154.333
United States...	893	41.536	159.813	62.518	264.760
West Indies.....	8.445	7.911	11.930	25.927	54.213
Great Britain...	....	1.392	3.677	1.907	6.976
South America.	.....	.....	1.132	753	1.885
Total.....	38.231	188.392	414.434	240.049	881.106

COAL TRADE BY COUNTIES.

Table A.

1873.	Cumberland.		Pictou.		Cape Breton.		Other Counties.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter	3,841	3,319	84,541	20,985	128,561	13,927	384	.....
2nd Quarter	6,834	6,044	77,296	71,650	155,112	110,698	.....	.....
3rd Quarter	7,307	7,472	110,823	150,355	189,739	256,601	85	6
4th Quarter	9,610	9,510	111,289	90,994	165,673	138,963	372	582
Total	27,592	26,345	383,949	333,984	639,085	520,189	841	588
1872	15,750	14,153	422,716	388,417	437,326	380,274	5,158	3,070

COAL TRADE BY COUNTIES.

Table B.

Market.	Cumberland.		Pictou.		Cape Breton.		Other Counties.	
	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack.
Nova Scotia—Land sales.	6653	229	39033	10177	3194	1670	6	.....
Sea borne.	954	22	53096	7861	86536	5362	452	50
Great Britain.....	.....	.....	.....	.....	6976	.....	.....	.....
New Brunswick..... ...	16337	2150	14348	2771	32395	216	.....	.....
Newfoundland..	.....	.....	1642	78	53867	274	... .	.....
Prince Edward Island.....	.....	.....	6170	15908	4108	604	.....	50
Quebec.....	.....	.....	99239	7577	79001	1212	30	.....
South America.....	.....	.....	753	....	1132	.....	.....	.....
United States.....	.....	.....	49042	7971	201177	6570	.....	.....
West Indies.....	.....	.....	18318	.....	35895	.....	.....	.....
Total.....	23944	2401	281641	52343	504281	15908	488	100

Collieries.	Seams.	Produce.	Sales			Per Centage	Colliery Consumption.		Per Centage.
			Bearing Royalty.	Free*	Total.		Engines.	Workmen.	
		Tons.	Tons.	Tons.	Tons.		Tons	Tons	
Cumberland County.									
Joggins	Joggins Main	19326	17117	2124	19241	99	725	189	4
Scotia		1562	1297	79	1376	88	290	30	14
Spring Hill	Black	6704	5530	198	5728	70	129	354	7
Pictou County.									
Acadia	Acadia	112308	95568	14407	109975	97	2979	1654	4
Albion Mines	Deep	43890	89680	17573	107253	76	18622	6385	17
	Main	97024							
Intercolonial	Acadia	41321	30347	6277	36624	88	1252	4189	13
Mitchell & Co	McBean	418	267	76	343	82	.....	31	8
Nova Scotia	Acadia	85908	65585	14010	79595	92	2480	1029	4
Vale	McBean	3080	194	.....	194	6	1256	369	53
Cape Breton.									
Block House	Block House	52571	47338	511	47849	91	2400	1086	6
Caledonia	Phelan	75202	65037	405	65442	87	1243	1360	4
Lorway	Emery	28540	15666	453	16119	63	1460	1045	8
Gardiner	Lorway?	9169	5686	.....	5686	62	1580	1028	28
Glace Bay	Hub	46817	44897	751	66437	97	1827	1425	4
	Harbor	21382	20718	71					
Gowrie	McAulay	59625	43936	10143	54079	90	3155	3198	10
International	Harbor	75380	72070	145	72215	95	1130	1812	4
Lingan	"Land"	35094	23640	572	26067	70	1900	1677	9
	"Sea"	1626	1301	225					
		329	329	.....					
Ontario	Phelan	8394	6848	65	6913	82	74	173	3
Reserve	Phelan	63929	41010	173	41183	64	2459	1823	7
Schooner Pond	Emery	13901	3964	.....	3964	29	453	623	7
Sydney Mines	Sydney Main	127393	101417	1706	103123	76	24359	7544	23
	Lloyds	6924							
Victoria	Ross	12809	10423	689	11112	90	1049	230	10
Inverness County.									
Chimney Corner		384	250	100	350	91	55	210	
Victoria County.									
New Campbellton		457	238	.....	238	52	80	60	30
		1051467	810353	70753	881106	83	70977	37421	10

* FREE COAL.—Chap. 9, Sec. 106, (*a*). "Slack Coal, that is coal that shall have passed through a screen, the bars of which are not wider apart than three-quarters of an inch."

N. B. The high per centage of colliery consumption at some mines is in part or wholly accounted for by the consumption at new works, *e. g.* The 6,924 tons mined from the Lloyds Cove seam, were used at the sinking of the new pits.

COAL PRODUCTION OF NOVA SCOTIA FROM 1827 *TO* 1873, *INCLUSIVE.*

	Tons.
1827 to 1830	51,172
1831 to 1840	808,145
1841 to 1850	1,415,385
1851 to 1860	2,292,805
1861 to 1870	5,092,587
1871 to 1873	3,231,428
Grand Total	12,879,898 Tons.

COAL SEABORNE. 1873.

By 428 Steamers	186,744	Tons.
" 3176 Sailing Vessels	633,400	"
	820,144	"

EXTRACT FROM THE CUSTOM HOUSE REPORTS, SHEWING QUANTITIES AND VALUE OF MINERALS EXPORTED FROM NOVA SCOTIA DURING THE FISCAL YEAR ENDED 30th JUNE, 1873.

Minerals.	Countries.	Quantities.	Value.
COAL	Great Britain	500	$ 1,875
	United States	232,760	434,861
	British West Indies	1,538	4,278
	Foreign West Indies	2,835	5,365
	St. Pierre and Miquelon	1,652	3,214
	Malaga	100	300
	B. N. A. Provinces	51,667	96,104
	Bermuda	350	789
	South America	1,345	2,923
		292,747	$549,709
IRON ORE	United States	300	$ 1500
MANGANESE	United States	131	4005
STONE	United States	.....	28,605
	B. N. A. Provinces	.....	4,179

NOTE.—In the Table from which the above is an extract, no account is given of the quantities of gold, grindstones, building stone, plaster, &c. exported, as in previous reports.

IMPORTS.

Coal and Coke	Great Britain	2,773	$15,633
	United States	4,868	22,830
		7,641	$38,463

Anthracite imported from the United States into Halifax.

1872. ..... 3715 tons.
1873. ..... 5605 "

STATEMENT OF COAL IMPORTED INTO AND EXPORTED FROM THE UNITED STATES DURING THE FISCAL YEAR ENDED JUNE 30TH 1873.

Imported.	Tons.		Value.
1873.	456,015		$1,539,663
1872.	496,631		$1,291,206
Decrease.....	40,616	Increase	$248,457

1873 Exported.	Bituminous. Tons.	Anthracite. Tons.
Canada.....	165,290	263,165
Cuba.....	30,301	24,217
Brazil	1,735	98
U. S. Columbia.....	6,363	26,006
West Indies.....	36,363	11,345
Mexico	2.411	5,337
West Coast South America	.....	3,242
Europe.....	.....	1,084
Asia.....	.....	7,686
Total.....	242,453	342,180
Value.....	$1,086,253	$1,827,822

1872. Total Bituminous and Anthracite 400,808 tons.

COAL IMPORTS AND EXPORTS OF THE UNITED STATES.

IMPORTS.

	Tons.	
1870.....	420,683	Bituminous.
1871.....	443,955	"
1872.....	490,631	"
1873.....	456,015	"

EXPORTS.

	Tons.		Tons.	
1870.....	106,820	Bituminous.	121,098	Anthracite
1871.....	133.380	"	134,571	"
1872.....	141,311	"	259,567	"
1873.....	242,453	"	342,180	"

COAL EXPORTS FROM GREAT BRITAIN TO AMERICA.

Countries to which Exported.	1871	1872
Canada	189.274	175.902
United States		
On the Atlantic	91.483	58.101
On the Pacific	60.365	50.004
British West Indies	175.335	147.997
Foreign West Indies	281.877	301.323
Mexico	2.821	7.609
Central America	114	6.064
U. S. of Columbia (New Granada)	11.241	4.503
Venezuela	370	388
Ecuador	1.015	
Peru	109.393	191.147
Bolivia	2.094	4.020
Chili	101.203	218.124
Brazil	316.417	315.536
Uruguay	96.648	130.914
Argentine Republic	62.860	62.312
Falkland Islands	245	696
Total	1.502.755	1 674.640

TOTAL COAL EXPORTS FROM GREAT BRITAIN.

1872	Tons	13,198,494	£10,442,321
1873	"	11,632,333	13,205,618

STATEMENT OF THE NUMBER AND CLASSES OF PERSONS EMPLOYED, AND AVERAGE RESULTS AT EACH COLLIERY DURING THE YEAR ENDED 31st DECEMBER, 1873.

COLLIERY.	Underground.				Surface.				Construction.		Total.		Avg No. of days per person.		No. Average of Tons per cutter.	Av'ge. tons per day per cutter.	Av'g quantity raised per day—Tons.	Horses.		Pits worked.
	Cut'rs	Labor ers.	Boys.	Days labor.	Mech anics.	Labor ers.	Boys.	Days labor.	Per sons.	Days labor.	Pers's	Days labo	Und'r gr'nd	Sur face.				bove	below	days.
Black Cumberland	....	....	....	....	....	....	....	....	4	44	4	44	....	11	....		....	....	....	....
Scotia	6	2	....	1435	2	2	....	916	....	....	12	2351	179	229	260	0.9	6	5	9	284
Joggins	34	12	11	13189	5	17	3	5334	6	716	88	19239	231	213	568	2.0	68	5	9	284
Spring Hill	11	5	....	4389	4	21	3	8391	20	3915	64	16695	274	300	610	2.2	25	6	....	274
Acadia, Pictou	151	89	18	53606	27	89	6	31585	....	....	380	85191	207	275	744	2.7	411	13	4	273
Albion Mines	237	92	61	89153	89	72	34	49237	....	....	585	138390	228	252	637	2.1	D 158 M 347	27	24	D 277 M 280
Intercolonial	60	35	20	23558	12	39	18	15937	44	11773	228	51268	205	231	689	3.1	186	7	5	222
Mitchell & Co.	4	3	1	517	....	1	....	100	....	....	9	617	64	100	104	....	....	1	....	....
Nova Scotia	80	22	18	36254	19	50	10	24514	....	....	199	61768	302	310	1074	3.5	283	6	5	303
Vale	42	9	....	9870	10	9	3	5298	79	10240	152	25108	193	241	73	0.5 3.1	30	2	....	135
Block-house. Cape Breton	81	24	27	24507	23	73	7	21345	15	3167	250	49019	186	207	649		256	9	23	205
Caledonia	91	10	14	27891	28	29	4	13106	20	3731	196	44728	242	215	826	3.2	300	7	13	251
Collins	....	4	....	48	....	2	....	33	....	....	6	81	12	17	....	....	....	....	....	....
Gardiner	38	7	6	10287	10	20	3	5537	5	631	89	16455	168	168	241	1 1	72	3	....	216
Glace Bay	93	10	24	35194	20	27	4	14848	42	12336	220	62378	277	291	733	2 6	Hb 167 Hr 71	10	19	Hr 289 Hub 280
Gowrie	96	7	26	30489	36	31	10	21257	41	4668	247	56414	236	280	621	2.2	219	7	4	272
International	80	20	17	33900	21	35	3	18145	3	200	179	52245	290	307	942	3.2	262	8	20	288
Lingan	70	15	21	21693	11	52	11	19485	12	745	192	41923	204	267	538	3.5	149 B 6	11	15	247 B 54
Lorway	49	31	8	17943	22	47	6	13763	32	4851	195	36557	204	183	582	2.2	110	12	4	259
Ontario	21	1	2	4492	2	16	1	3125	3	156	46	7773	183	164	400	1.6	34	2	1	244
Reserve	120	10	29	31140	33	48	4	16167	....	....	244	47307	195	190	533	1.8	226	11	12	283
Schooner Pond	35	5	8	10209	12	23	4	10020	15	900	102	21129	212	257	397	2.0	71	6	4	194
Sydney Mines	183	34	68	71822	57	85	26	49050	68	20385	521	140257	252	292	734	2.6	L 23 S 473	21	51	L 301 S 269
Victoria	23	11	3	8909	6	6	4	4776	....	....	53	13685	79	73	556	1.9	178	2	2	288
Chimney Corner, Inverness	14	....	2	443	....	3	1	156	....	....	20	599	28	39	27	0.9	14	....	....	28
New Campbellton, Victoria	20	12	3	1302	15	14	3	1367	14	963	81	3632	37	42	23	0.5	11	5	2	43
					464	811	168	35345										186	226	225

COLLIERY CONSTRUCTION ACCOUNT.

COLLIERY.		Shafts.	Slopes.	Adits.	Machinery.	Colliery Build'gs.	Dwellings.	Surface Works.	Railw'ys	Wharves	Prospecting.
Black	Cumberland	- -	- -	- -	- -	- -	- -	- -	- -	- -	55 00
Joggins		- -	- -	201 95	527 60	310 00	978 38	21 00	261	- -	- -
Scotia		- -	- -	204 00	- -	12 00	- -	- -	- -	- -	- -
Spring Hill		- -	6934 13	200 00	19864 46	3623 37	16650 00	5615 67	16491 10	- -	56 70
Acadia	Pictou	- -	- -	- -	10884 31	1950 75	15648 63	1564 90	729 96	- -	- -
Albion Mines		3837 64	- -	- -	10017 10	59 65	4615 46	- -	- -	- -	- -
Intercolonial		4305 62	3710 42	685 15	6164 05	809 20	13040 00	2568 07	16581 78	202 50	- -
Mitchell & Co.		- -	- -	- -	- -	- -	- -	- -	- -	- -	398 75
Nova Scotia		- -	1600	- -	- -	2525 00	2925 00	3260 00	1566 00	1989 00	25 00
Vale		- -	11827	2855.00	2902 00	300 00	14473 00	1966 00	105397 00	11880 00	- -
Merigomish		- -	- -	- -	- -	- -	- -	- -	- -	- -	79 00
Block house	Cape Breton	- -	- -	- -	699 00	- -	- -	- -	- -	7242 70	- -
Caledonia		- -	392 89	110.94	5171 39	393 36	2610 02	145 95	222 85	1386 84	- -
Collins		- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Lorway		2042 42	2233 83	347 33	20250 00	4408 78	4287 00	5459 27	1480 97	- -	- -
Gardiner		5517 02	- -	2774 00	1302 25	2342 00	5160 00	792 12	125 70	- -	140 00
Glace Bay		9144 80	- -	1285 85	2920 00	2595 96	- -	- -	- -	- -	- -
Gowrie		210 00	- -	110 00	950 00	1065 00	1000 00	60 00	850 00	13960 00	- -
International		48 00	- -	1414 30	600 00	- -	11800 00	2358 76	493 57	2226 36	61 70
Lingan		684 47	2447 00	3228 16	3211 69	2041 35	7691 21	- -	- -	907 95	- -
Ontario		- -	78 75	548 16	20 00	20 00	- -	- -	- -	- -	- -
Reserve		275 33	1016 24	877 56	6037 87	3481 68	2968 79	767 20	536 68	- -	- -
Schooner Pond		- -	3577 13	- -	2569 68	6518 80	- -	1817 98	- -	- -	- -
Sydney Mines		11423 99	- -	- -	186 70	98 34	2571 07	819 34	1023 83	1151 83	- -
Victoria		- -	. -	250 00	1700 00	- -	- -	900 00	- -	200 00	- -
Sydney Mining Co.		- -	- -	30 00	650 00	- -	- -	- -	575 00	- -	- -
New Campbellton	Victoria	- -	. .	1635 00	595 00	- -	1393 00	2496 00	464 00	730 00	- -
		37,489 29	33,817 39	16,757 40	97,223 10	32,555 24	107,751 56	306.12 26	146.799 44	41877 18	816 13

TABLES shewing the number of Gold Mines worked, the average number of men engaged in Mining, the quantity of quartz Raised and Crushed, the average yield per ton, and the total yield of Gold, &c., &c., in the several Gold Districts, as shewn by the Statistical Returns of the Deputy Commissioners.

JANUARY, 1873.

DISTRICT.	Number of mines	Average No. of men daily employed.	Quartz Raised.	Quartz Crushed.	Yield per Ton.			Maximum yield per ton,			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
			Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwts.	Grs.
Stormont	2	8	130	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Wine Harbor	1	29	113	113	1	7	20	1	7	20	.....	.....	.....	156	7	.....
Sherbrooke	10	107	517	517	...	18	10	2	4	3	.....	.....	.....	476	10	12
Tangier	4	41	91	91	...	19	1	1	4	2	.....	.....	.....	86	17	7
Montagu	2	31	35	35	3	10	6	3	10	6	.....	.....	.....	123	14	.....
Waverley	4	45	116	116	...	13	8	...	15	23	.....	.....	.....	77	2	.....
Oldham	2	23	31	31	...	17	20	1	8	8	.....	.....	.....	27	1	20
Renfrew	2	16	100	100	...	4	8	...	6	21	.....	.....	.....	22	6	.....
Uniacke	2	2	16	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Caribou	1	4	11	11	1	0	17	1	0	17	.....	.....	.....	11	8	12
Guy's River	1	8	250	250	...	2	9	...	2	9	.....	.....	.....	30	0	17
Unprocl'd. & other Dis'ts	2	19	61	61	...	1	1	...	1	1	.....	.....	.....	3	5	4
	33	333	1471	1325	...	15	7	3	10	6	.....	.....	.....	1014	13	00

FEBRUARY.

Stormont	2	8	50	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Wine Harbor	1	27	47	47	1	14	19	1	14	19	.....	.....	.....	81	16	.....
Sherbrooke	10	96	449	449	1	...	...	2	6	1	.....	.....	.....	449	6	12
Tangier	8	48	91	91	1	1	4	1	4	4	.....	.....	.....	96	8	.....
Montagu	2	42	101	101	1	5	...	3	1	21	.....	.....	.....	126	7	.....
Waverley	4	60	308	308	...	10	6	...	16	...	.....	.....	.....	156	17	.....
Oldham	3	19	55	55	2	1	2	3	14	2	.....	.....	.....	112	2	18
Renfrew	2	12	40	40	...	7	12	...	7	12	.....	.....	.....	15	.....	....
Uniacke	2	2	8	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Caribou	1	4	.....	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Gay's River	1	8	280	280	...	1	17	...	1	17	.....	.....	.....	23	19	10
Unprocl'd. & other Dist's.	1	16	56	56	...	2	5	...	2	5	.....	.....	.....	6	3	.....
	37	342	1485	1427	...	14	23	3	14	2	.....	.....	.....	1068	19	16

MARCH.

DISTRICT.	Number of Mines	Average No. men daily employed.	Quartz Raised.	Quartz Crushed.	Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
			Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwt	Grs.	Oz.	Dwt.	Grs.
Stormont	2	6	47	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Wine Harbor	1	31	124	124	1	13	13	1	17	18	.....	.....	.....	208	4	.....
Sherbrooke	9	125	364	364	...	19	20	1	11	11	.....	.....	.....	361	6	.....
Tangier	6	31	109	117	...	19	10	1	4	2	.....	.....	.....	113	13	18
Montagu	2	45	75	75	1	16	5	4	16	15	.....	.....	.....	135	16	.....
Waverley	4	58	272	272	...	10	20	...	17	8	.....	.....	.....	147	7	.....
Oldham	2	23	70	70	1	7	7	4	14	5	.....	.....	.....	95	4	15
Renfrew	2	11	30	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Uniacke	2	6	27	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Caribou	1	4	10	10	...	12	19	...	12	19	.....	.....	.....	6	8	.....
Gay's River	1	9	280	280	...	2	7	...	2	7	.....	.....	.....	32	11	.....
Unprocl'd. & other Dis'ts	1	1	.....	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
	33	350	1408	1312	...	16	19	4	16	15	.....	.....	.....	1100	10	9

APRIL.

Stormont	2	6	30	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Wine Harbor	1	33	217	187	1	1	16	1	5	9	.....	.....	.....	202	19	.....
Sherbrooke	10	81	390	390	...	18	5	3	3	15	.....	.....	.....	355	8	13
Tangier	4	34	181	227	...	8	12	2	18	7	.....	.....	.....	96	10	17
Montagu	3	41	41	41	3	17	22	3	17	22	.....	.....	.....	159	15	.....
Waverley	4	47	261	261	...	9	23	...	18	6	.....	.....	.....	130	3	.....
Oldham	3	19	110	110	...	17	19	4	7	...	.....	.....	.....	98	0	10
Renfrew	4	11	69	69	...	3	19	...	6	8	.....	.....	.....	13	4	.....
Uniacke	2	6	21	68	...	14	12	1	5	10	.....	.....	.....	49	6	.....
Caribou	.....	.....	.....	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Gay's River	1	13	300	300	...	2	20	...	2	20	.....	.....	.....	43	.....	.....
Unprocl'd. & other Dis'ts	1	4	20	20	...	19	11	...	19	11	.....	.....	.....	19	9	20
	35	295	1640	1673		13	23	3	17	22	.....	.....	.....	1167	16	12

MAY.

DISTRICT.	Number of Mines.	Average No. men daily employed.	Quartz Raised.	Quartz Crushed.	Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
			Tons.	Tons.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.	Oz.	Dwts.	Grs.
Stormont	2	3	50	172	...	4	5	...	4	5	...	...	...	36	3	14
Wine Harbor	2	45	244	294	...	17	18	1	4	14	...	...	...	260	18	18
Sherbrooke	11	92	902	902	...	12	22	2	4	...	...	...	...	583	17	22
Tangier	4	29	89	89	...	15	8	1	4	2	...	...	...	68	2	11
Montagu	3	47	110	110	1	9	...	3	19	6	...	...	...	159	10	...
Waverley	4	47	258	258	...	8	5	...	17	3	...	...	...	106	...	...
Oldham	6	19	34	34	...	11	3	1	1	14	...	...	...	18	19	20
Renfrew	2	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Uniacke	4	8	29	...	...	...	...	...	...	...	...	...	...	...	...	...
Caribou	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gay's River	1	8	200	200	...	2	22	...	2	22	...	...	...	29	9	13
Unprocl'd. & other Dis'ts.	1	4	20	...	...	...	...	...	...	...	...	...	...	...	...	...
	40	308	1936	2059	...	10	19	3	19	6	...	...	...	1263	2	2

JUNE.

Stormont	2	1	20	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Wine Harbor	3	64	215	206	...	19	15	1	2	1	.....	.....	.....	206	19	.....
Sherbrooke	11	96	543	543	...	13	16	2	...	...	.....	.....	.....	370	17	21
Tangier	4	33	147	77	...	14	22	...	17	14	.....	.....	.....	57	10	.....
Montagu	1	50	31	31	4	7	5	4	7	5	.....	.....	.....	135	4	.....
Waverley	4	50	143	143	...	11	20	...	15	21	.....	.....	.....	84	17	.....
Oldham	4	19	45	45	...	7	17	...	9	16	.....	.....	.....	17	8	20
Renfrew	.....	.....	.....	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Uniacke	4	8	39	30	...	7	8	...	18	...	.....	.....	.....	10	18	.....
Caribou	.....	.....	.....	.....	...	...	...	...	...	...	.....	.....	.....	.....	.....	.....
Gay's River	1	14	364	364	...	2	13	...	2	13	33	15	15	72	8	15
Unprocl'd. & other Dists.	2	19	34	14	...	14	4	...	14	4	.....	.....	.....	9	18	10
	36	354	1581	1453	...	13	7	4	7	5	33	15	15	966	1	18

JULY.

DISTRICTS.	No. of Mines.	Average number of men daily employed.	Quartz Raised.	Quartz Crushed.	Yield per Ton.			Maximum yield per Ton			Gold obtained otherwise than from Crusher.			Total yield.		
			Tons.	Tons.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont	.....	.....	.....	9	...	3	18	...	4	3	...	....	....	1	14	15
Wine Harbor	2	53	259	259	...	18	7	...	19	8	...	...	....	237	3	16
Sherbrooke	13	137	740	740	...	15	2	6	16	...	...	...	....	559	10	8
Tangier	2	18	64	44	1	3	1	1	19	12	...	...	...	50	15	...
Montagu	3	34	133	133	...	14	20	2	4	15	...	...	...	98	14	9
Waverley	3	33	76	76	...	10	13	...	18	3	...	...	...	40	1	...
Oldham	6	12	17	17	...	13	19	1	10	7	...	...	...	11	5	14
Renfrew	2	4	36	36	...	4	4	...	7	4	...	...	...	7	10	...
Uniacke	2	3	4	.....	...	...	...	...	...	...	...	...	...	.....	...	...
Caribou	.....	.....	.....	.....	...	...	...	...	...	...	...	...	...	.....	...	...
Gay's River	1	5	200	200	...	1	21	...	1	21	...	...	...	19	1	20
Unprocl'd. & other Dis'ts	1	1	.....	13	...	8	2	...	8	2	...	...	...	5	5	2
	35	300	1529	1527	..	13	12	6	16	...	...	...	...	1031	1	12

AUGUST.

Stormont	.....	.....	.....	.....	...	..	..	..	..	..	..	..	..	.....	..	..
Wine Harbor	2	60	257	257	....	11	20	..	16	14	..	..	..	152	5	5
Sherbrooke	11	108	588	588	....	10	11	3	3	8	..	..	..	307	17	..
Tangier	2	15	55	61	....	16	12	1	9	12	..	..	..	50	6	8
Montagu	3	30	31	31	6	6	..	6	6		..	..	..	195	7	..
Waverley	3	40	60	60	....	6	3	..	10	10	..	..	..	18	8	.
Oldham	3	23	68	68	1	16	..	3	17	12	..	..	..	121	13	..
Renfrew	1	8	20	.....	....	..	..	..	...	..	..	..	..	.....	..	..
Uniacke	2	3	3	40		0	11	1	0	11	..	..	..	40	18	18
Caribou	.....	.....	.....	.....	....	..	..	..	..	..	..	..	..	.....	..	..
Gay's River	1	8	180	180	....	2	3	..	2	3	..	..	..	19	4	12
Unprocl'd & other Dis'ts	1	1	.....	13	....	8	2	..	8	2	..	..	..	5	5	1
	29	296	1262	1298	....	14	1	6	6	..	..	..	..	911	4	20

SEPTEMBER.

DISTRICTS.	Number of Mines	Average No. men daily employed.	Quartz Raised.	Quartz Crushed.	Yield per ton.			Maximum yield per ton.			Gold obtained otherwise than from Crusher.			Total yield of Gold.		
			Tons.	Tons.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wine Harbor	2	46	274	274	...	14	22	2	13	15	...	...	...	209	7	5
Sherbrooke	11	107	706	706	...	13	8	2	2	7	...	...	...	471	2	...
Tangier	2	25	84	65	..	7	...	...	17	12	...	...	...	19	8	11
Montagu	3	27	41	41	2	6	9	2	15	17	...	...	...	91	18	...
Waverley	3	40	201	201	...	8	16	...	11	1	...	...	...	87	10	...
Oldham	4	23	59	59	2	7	...	4	16	14	...	...	...	139	12	...
Renfrew	1	4	10	...	...	...	...	...	...	...	...	...	...	...	...	...
Uniacke	2	3	7	7	...	18	15	...	18	15	...	...	...	6	10	12
Caribou	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gay's River	1	8	180	180	...	2	12	...	2	12	...	...	...	22	9	2
Unprocl'd. & other Dis'ts	1	1	...	14	...	7	12	...	7	12	...	...	...	5	5	1
	30	284	1562	1547	...	13	14	4	16	14	...	...	...	1053	2	7

OCTOBER.

Stormont	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wine Harbor	2	36	224	254	...	14	10	1	4	20	...	...	...	183	11	9
Sherbrooke	11	108	528	528	...	15	15	2	14	...	...	...	...	417	13	12
Tangier	5	29	69	67	...	6	21	...	7	2	...	...	...	23	2	...
Montagu	2	26	29	29	3	3	10	3	3	10	...	...	...	92	...	...
Waverley	3	32	118	118	...	7	15	...	10	8	...	...	...	46	5	...
Oldham	2	27	87	87	1	16	21	3	5	22	...	...	...	160	4	10
Renfrew	1	4	20	10	...	3	16	...	3	16	...	...	...	1	16	18
Uniacke	4	3	5	25	...	12	19	1	2	3	...	...	...	16	0	12
Caribou	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gay's River	1	8	250	250	...	1	12	...	1	12	...	...	...	25	1	4
Unprocl'd. & other Dist's	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	31	273	1330	1368	...	14	2	3	5	22	...	...	...	965	14	17

NOVEMBER

DISTRICTS.	No. of Mines.	Average No. men daily employed.	Quartz Raised.	Quartz Crushed.	Yield per Ton.			Maximum yield per Ton.			Gold obtained otherwise than from Crusher.			Total yield.		
			Tons.	Tons.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.	Oz.	Dwt.	Gr.
Stormont	..	....	.....	.....	..	..	..	....	....	....	....	....	....	.....	.....	.....
Wine Harbor	2	27	60	30	..	18	5	....	18	5	....	....	....	27	7	.....
Sherbrooke	11	108	767	767	...	11	4	2	4	12	....	.....	....	428	5	.....
Tangier	5	21	80	104	..	8	8	....	18	6	....	....	....	43	7	18
Montagu	2	25	27	27	2	8	1	2	8	1	....	....	....	64	18	.....
Waverley	4	32	95	95	..	10	13	....	15	15	....	....	....	50	4	.....
Oldham	4	27	52	52	1	6	11	7	5	....	....	.....	....	68	7	11
Renfrew	..	....	.....	.....	..	..	..	....	....	....	....	.....	....	.....	.....	.....
Uniacke	3	3	5	28	..	4	2	....	13	....	....	....	....	5	15	.....
Caribou	..	....	.....	.....	..	..	..	....	....	....	....	....	....	.....	.....	.....
Gays River	1	9	250	250	..	1	7	....	1	7	....	....	....	16	10	.....
Unprocl'd. & other Dis'ts	..	....	.....	.....	..	..	..	....	....	....	....	.....	....	.....	.....	.....
	32	252	1336	1353	..	10	10	7	5	....	....	....	....	704	14	5

DECEMBER.

Stormont	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wine Harbor	3	37	145	222	...	6	14	1	7	6	...	...	...	73	1	22
Sherbrooke	7	45	693	600	...	7	1	2	15	16	...	...	...	244	5	...
Tangier	5	18	39	37	...	11	2	...	11	2	...	...	...	20	9	22
Montagu	2	24	25	25	2	5	14	2	5	14	...	...	...	57	...	...
Waverley	3	36	105	105	...	12	1	...	17	7	...	...	...	63	6	...
Oldham	6	35	34	34	3	14	22	22	...	...	...	...	...	128	1	23
Renfrew	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Uniacke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Caribou	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gay's River	1	11	250	250	...	1	12	...	1	12	...	...	...	19	2	2
Unprocl'd. & other Dis'ts	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	27	206	1291	1366	...	8	20	22	...	...	...	...	...	605	6	21

B.

STATEMENT shewing the average daily labor employed, the amount of Quartz crushed. "the yield of Gold per ton of Quartz," the Quantities of Gold from Alluvial Mines, the yield of Gold, the maximum yield per ton in each District, and in the whole Province, and the value of the average yield of Gold per man employed in mining for the Twelve Months ended December 31*st*, 1873.

DISTRICT.	Average men employed.	Crushing Mills employed.	Steam Power.	Water Power.	Quartz, &c., Crushed.	Yield per ton.	Gold from Alluvial Mines.	Total yield of gold.	Maximum yield per Ton.	Average yield per man for Twelve Months at $18.50 per oz.
Stormont	3	3	1	2	181	0 4 4	.....	37 18 5	... 4 5	233 71
Wine Harbor	40	5	4	1	2267	0 17 15	.....	2000 0 3	2 13 15	925 00
Sherbrooke	101	12	9	3	7187	0 15 9	.....	5026 0 4	6 16 0	920 59
Tangier	28	4	3	1	1070	0 13 4	.....	726 11 16	2 18 7	220 75
Montagu	35	3	3	..	679	2 2 9	.....	1440 3 9	6 6 0	761 14
Waverley	43	3	2	1	2013	0 10 0	.....	1009 0 0	8 18 6	434 10
Oldham	23	3	1	2	662	1 10 3	.....	998 2 17	22 0 0	802 82
Renfrew	6	5	2	3	255	0 4 16	.....	59 16 18	.. 7 12	184 34
Uniacke	4	4	3	1	198	0 13 1	.....	129 8 18	1 5 10	599 63
Caribou	1	2	1	1	21	0 16 23	.....	17 16 12	1 0 17	329 29
Gay's River	9	1	1	..	2984	0 2 8	33 15 15	352 17 23	.. 2 22	725 30
Unproc'd and other Dis'ts	5	8	4	4	191	0 5 17	.....	54 11 14	.. 19 11	201 83
	298	53	34	19	17708	0 13 10	33 15 15	11852 8 19	22 0 0	735 82

No. 1.

Statement shewing the number of Men employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	STORMONT.					WINE HARBOR.					SHERBOOKE.					TANGIER.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January	8	....	....	..	..	29	113	156	7	...	107	517	476	10	12	41	91	86	17	7
February	8	....	...	..	..	27	47	81	16	....	96	449	449	6	12	48	91	96	8	...
March	6	....	....	..	..	31	124	208	4	...	125	364	361	6	..	31	117	113	13	18
April	6	....	....	..	..	33	187	202	19	..	81	390	355	8	13	34	227	96	10	17
May	3	172	36	3	14	45	294	260	18	18	92	902	583	17	22	29	89	68	2	11
June	1	....	....	..	..	64	206	206	19	...	96	543	370	17	21	33	77	57	10	..
July	..	9	1	14	15	53	259	237	3	16	137	740	559	10	8	18	44	50	15	..
August	..	....	....	..	..	60	257	152	5	5	108	588	307	17	..	15	61	50	6	8
September	..	....	....	..	..	46	274	209	7	5	107	706	471	2	..	25	65	19	8	11
October	..	....	....	..	..	36	254	183	11	9	108	528	417	13	12	29	67	23	2	..
November	..	....	....	..	..	27	30	27	7	..	108	767	428	5	..	21	104	43	7	18
December	..	....	....	..	..	37	222	73	1	22	45	693	244	5	..	18	37	20	9	22
	3	181	37	18	5	40	2267	2000	00	3	101	7187	5026	00	4	28	1070	726	11	16

No. 2.

Statement shewing the number of Men employed, Quartz Crushed, and Gold obtained each Month in each District.

MONTH.	MONTAGU.					WAVERLEY.					OLDHAM.					RENFREW.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January	31	35	123	14	...	45	116	77	2	...	23	31	27	1	20	16	100	22	6	...
February	42	101	126	7	...	60	308	157	17	...	19	55	112	2	18	12	40	15	...	...
March	45	75	135	16	...	58	272	147	7	...	23	70	95	4	15	11	...	...	...	...
April	41	41	159	15	...	47	261	130	3	...	19	110	98	...	10	11	69	13	4	...
May	47	110	159	10	...	47	258	106	...	...	19	34	18	19	20	...	...	...	...	...
June	50	31	135	4	...	50	143	84	17	...	19	45	17	8	20	...	...	...	...	...
July	34	133	98	14	9	33	76	40	1	...	12	17	11	5	14	4	36	7	10	...
August	30	31	195	7	...	40	60	18	8	...	23	68	121	13	...	8	...	...	...	...
September	27	41	91	18	...	40	201	87	10	...	23	59	139	12	...	4	...	...	...	...
October	26	29	92	...	...	32	118	46	5	...	27	87	160	4	10	4	10	1	16	18
November	25	27	64	18	...	32	95	50	4	...	27	52	68	7	11	...	...	...	...	...
December	24	25	57	...	...	36	105	63	6	...	35	34	128	1	23	...	...	...	...	...
	35	679	1440	3	9	43	2013	1009	0	...	23	662	998	2	17	6	255	59	16	18

No. 3.

STATEMENT shewing the number of Men employed, Quartz crushed, and Gold obtained each month in each District.

MONTH.	UNIACKE.					CARIBOU					GAY'S RIVER.					UNPROCLAIMED, &c.				
	Men.	Tons.	Oz.	Dwt.	Grs.	Men.	Tons.	Oz.	Dwt.	Grs.	Men.	Tons	Oz.	Dwt	Grs.	Men.	Tons.	Oz.	Dwt.	Grs.
January	2	.....	.....	.....	.....	4	11	11	8	12	8	250	30	.....	17	19	61	3	5	4
February	2	.....	.....	.....	.....	4	.....	.....	.....	.....	8	280	23	19	10	16	56	6	3	.....
March	6	.....	.....	.....	.....	4	10	6	8	.....	9	280	32	11	.....	1	.....	.....	.....	.....
April	6	68	49	6	.....	.....	.....	.....	.....	.....	13	300	43	.....	.....	4	20	19	9	20
May	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	200	29	9	13	4	.....	.....	.....	.....
June	8	30	10	18	.....	.....	.....	.....	.....	.....	14	364	72	8	15	19	14	9	18	10
July	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	200	19	1	20	1	13	5	5	2
August	3	40	40	18	18	.....	.....	.....	.....	.....	8	180	19	4	12	1	13	5	5	1
September	3	7	6	10	12	.....	.....	.....	.....	.....	8	180	22	9	2	1	14	5	5	1
October	3	25	16	.....	12	.....	.....	.....	.....	.....	8	250	25	1	4	.....	.....	.....	.....	.....
November	3	28	5	15	.....	.....	.....	.....	.....	.....	9	250	16	10	.....	.....	.....	.....	.....	.....
December	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	250	19	2	2	.....	.....	.....	.....	.....
	4	198	129	8	18	4	21	17	16	12	9	2984	352	17	23	5	191	54	11	14

PLASTER, (GYPSUM) TRADE.

	1872. Tons.	1873. Tons.	Value.
Antigonish	.....	700	700
Big Bras D'or	.....	2,575	2,575
Cheverie	29,430	30,679	30,679
Hantsport	4,340	3,310	3,310
Maitland	510	615	651
Parrsboro'	.....	2,630	2,630
Walton	3,370	4,356	4,356
Windsor	61,820	75,828	75,828
	99,470	120,693	$ 120,693

FREE STONE.

	Tons.	
Cheverie	405	$ 1420
Hantsport	150	1500
Minudie	475	3800
Windsor	150	1202
	1180	$ 7922

N. B. The probable shipments from Wallace, 5000 *Tons.*

GRIND STONES.

	Tons.	
Minudie	1,590	$ 22,260
" "Ritchie," 3,500 pieces.	15	1,050
" "Scythe," 2,600 boxes	35	3,300

PLUMBAGINOUS SHALE.

	Tons.	
Windsor	11	$ 110

MOULDING SAND.

	Tons.	
Windsor	130	$ 260

FINANCIAL STATEMENT—GOLD.

Department of Mines for the 12 *Months ended December* 31*st*, 1873.

	RECEIPTS.				EXPENDITURE.					
DISTRICTS.	Rents.	Royalty.	Sl tcs	Totals.	Salaries, Surveys, &c.	Return of Rents.	Return of Royalty.	Royalty Com'son.	Lands.	Totals.
Oldham	$ 129 67	390 72	.....	520 39	255 00	16 00	.....	14 72	.....	285 72
Renfrew	252 00	67 69	.....	319 69	211 50	22 00	.....	69	.....	234 19
Waverley	6 00	305 55	.....	311 55	.....	.....	144 61	8 05	.....	152 66
Tangier	134 00	404 47	.....	538 47	.....	54 50	.....	10 61	.....	65 11
Stormont	74 00	70 31	.....	144 31	319 96	15 57	.....	9 29	.....	344 82
Wine Harbour	472 00	843 07	.....	1315 07	436 54	.....	.....	48 35	.....	484 89
Sherbrooke	316 00	1881 54	.....	2197 54	720 00	78 88	.....	87 93	.....	886 81
Ovens	16 00	.....	.....	16 00	.....	.....	.....	.....	.....	.....
Fifteen Mile Stream	4 00	.....	.....	4 00	.....	.....	.....	.....	.....	.....
Montagu	8 00	539 45	.....	547 45	.....	.....	.....	27 46	.....	27 46
Uniacke	466 00	65 54	.....	531 54	248 00	47 36	.....	2 12	.....	297 48
Gays River	94 00	157 57	.....	251 57	.....	2 00	.....	5 85	.....	7 85
Caribou	68 00	27 97	.....	95 97	.....	.....	18 57	.....	.....	18 57
Lawrencetown	6 00	.....	.....	6 00	.....	.....	.....	.....	.....	.....
Unproclaimed	62 00	9 11	.....	71 11	31 50	.....	.....	.....	.....	31 50
Prospecting Ln,ces	.....	.....	.....	792 59	.....	.....	.....	.....	.....	.....
	$2107 67	4762 99	.....	7663 25	2222 50	236 31	163 18	215 07	.....	2837 06

OTHER THAN GOLD.

Department of Mines for the 12 Months ended December 31st, 1873.

COUNTIES.	RECEIPTS. Licenses to Search.	Licenses to Work.	Royalty.	Totals.	EXPENDITURE. Return Licenses to Search.	Return Licenses to Work.	Surveys.	Totals.
Antigoni sh	$580.00	.....	.....	580.00	.....	.....	300.00	300.00
Cumberland	920.00	1475.00	1477.92	3872.92	.....	.....	.....	60.00
Cape Breton	620.00	525.00	51.905.86	53.050.86	60.00	.....	16.00	56.00
Pictou	2160.00	525.00	30.123.74	32,808.74	40.00	.....	.....	.....
Inverness	900.00	275.00	.....	1175.00	.....	.....	.....	40.00
Colchester	500.00	50.00	.....	550.00	40.00	.....	.....	20.00
Halifax	40.00	.....	.....	40.00	20.00	.....	.....	.....
Hants	240·00	.....	.....	240.00	.....	.....	.....	.....
Richmond	380.00	.....	.....	380.00	.....	.....	.....	.....
Victoria	220.00	.....	.....	220.00	.....	.....	.....	20.00
Guysborough	200.00	.....	.....	200.00	20.00	.....	.....	.....
Lunenburg	20.00	.....	.....	20.00	.....	.....	.....	.....
Digby	60.00	.....	.....	60.00	.....	.....	.....	.....
Total	$ 6,840.00	2,850.00	83,507.52	93,197.52	180.00	.....	316	496.00

ABSTRACT ACCOUNT.

RECEIPTS and EXPENDITURE for the Twelve Months, ended 31st December, 1873.

RECEIPTS.				EXPENDITURE.			
Rents.....Gold....	$ 2107 67			Salaries and Surveys, Gold.....	$ 2222 50		
Royalty..... "	4762 99			Royalty Commission "	215 07		
Prospecting Licenses "	792 59	7663 25		Return Rents "	236 31		
				Return Royalty "	163 18	2837 06	
Licenses to Search Coal, &c.	6840 00						
Work " ..	2850 00			Return Licenses to Search Coal..	180 00		
Royalty " ..	83507 52	93197 52		Surveys.....	316 00	496 00	
				Postage.....	81 53		
				Stationery and Printing.....	1972 14		
				General Expenses.....	4943 51		
						6997 18	
		$100,860 77					$10,330 24

ABSTRACT ACCOUNT of the Subscriptions made for the Relief of the Sufferers by the DRUMMOND COLLIERY EXPLOSION.

	$ c.	$ c.
Halifax, Nova Scotia	7842 47	
Pictou "	1789 87	
Yarmouth "	677 00	
Truro "	311 64	
Shubenacadie "	131 75	
Goldenville "	109 55	
Amherst "	65 00	$10,927 28
Sydney, Cape Breton	.....	144 50
Montreal	.....	5270 36
St. John, New Brunswick	1400 00	
Oxford, "	32 84	1432 84
Other Sources	499 70	
Eastern Division Intercolonial R. R.	55 00	554 70
Boston, United States	1062 24	
Portland "	177 76	1240 00
Local Subscription.		
New Glasgow	564 00	
Stellarton	296 50	
Westville	278 78	
Albion Mines	663 25	
Acadia Colliery	411 75	
Nova Scotia "	265 40	
Vale "	171 00	2650 68
Blockhouse and Gowrie Collieries	266 00	
Reserve Colliery, C. B.	231 00	
International "	175 56	
Lorway "	139 50	
Schooner Pond "	98 10	
Caledonia "	102 50	
Gardiner "	57 00	1069 66
Albert " N.B.	.....	65 00
Pennsylvania Mines	237 97	
Other Sources abroad	84 00	321 97
Total		$23,676 99

REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA.

FOR THE YEAR 1874.

HALIFAX, N. S.:
PRINTED BY THE CITIZEN PUBLISHING COMPANY.
1875

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LETTER

FROM

THE COMMISSIONER OF PUBLIC WORKS AND MINES,

TRANSMITTING

A Report of the Department of Mines.

DEPARTMENT OF MINES,
Halifax, February 15th, 1875.

SIR,—I have the Honor to transmit the report of the Inspector of Mines and the statistical information collected by this Department during the year 1874.

ROBERT ROBERTSON,
Commsssioner of Public Works and Mines.

HON. P. C. HILL,
Provincial Secretary.

REPORT

ON THE

INSPECTION OF MINES,

IN THE

PROVINCE OF NOVA SCOTIA.

For the year ended 31st December, 1874.—By HENRY S. POOLE, F. G. S.;

ASSOCIATE OF THE ROYAL SCHOOL OF MINES.

HALIFAX, February, 1875.

SIR,—I have the honour to lay before you my annual report on the state of the mining industries of the Province. In it I have added a few remarks that the mining practices of other countries have suggested, as relevant to our present condition and circumstances.

To prepare the general summary of the mineral produce of the country during 1874, as given below, recourse has been had to miners and quarriers, as well as to those working under leases from the Crown. Acknowledgments are due to them; and also to the Collectors of Customs at the several mineral shipping ports, for the interest they have kindly taken in forwarding statistics.

GENERAL SUMMARY.

Mines.	Minerals.	Quantities.	Values.
30	Coal.....tons.	872,720	$1,787,098
33	Gold, 13,844 tons quartz.... oz	9,141	164,538
2	Iron ore. .....tons.	2,469	7,407
12	Plaster..... "	104,140	104,140
10	Freestone, (Grindstones, &c.) "	8,829	40,313
1	Limestone..... "	448	537
	Moulding Sand..... "	300	600

A comparison of the above summary with that of the preceding year, shows a falling off in each of the industries represented. While the general dullness of trade will account for the reduced production of coal, plaster and freestone, it will not for that of gold and the continued decline in this branch of mining industry, must be set down to other causes such as the increased price of labour and material. Further reference will be made to this subject under the head of Gold Mining.

The Coal Trade.—The past year was one of general depression and contrasts unfavourably with the preceding, for beside the actual decrease, 131,979 tons, there was the dullness resulting from the inactivity of new works and want of occupation for the additional labour, drawn by the previous brisk demand, to this branch of business.

The anticipated continuance of the active trade of 1873 was reluctantly acknowledged by many operators to be impossible, so that they continued until well on in the spring, to accumulate stocks. During the first quarter of the year more coal was mined than during any subsequent quarter, and at its end 285,000 tons were on hand, an unusually large amount. Ordinarily the production during the winter months is the smallest of the year. On the first of July the total quantity on bank was as much as 303,000 tons. At some of the mines the sales were as large as they had been in former years, but no where were they equal to the capacity for production. A comparison of the tables stating the labour employed during the two years shows the average number of working days to be lower in 1874, and that consequently in several localities the working man was seriously inconvenienced by the late condition of the trade.

Writers in the public press of England and Canada have, in speaking of the coal trade of Nova Scotia, quoted figures given in the Sessional Papers, which they naturally presumed were correct, being compilations from the Custom House reports, and they have drawn conclusions that those figures seem to deduce. The value of their strictures may be gathered from a comparison of the statements given below. The one compiled from the Custom House reports, and the other from sworn returns made by shippers who had to pay royalty on the amounts stated.

Nova Scotia Coal Exports Summary.

Mines Department Statistics.

For the year ended 30th June—

	1871	1872	1873
B. N. A. Provinces.	179,168	181,996	320,122
Foreign Ports	271,552	360,976	332,172
	450,720	542,972	652,294

Sessional Papers Statistics.

For similar periods—

B. N. A. Provinces.	49,308	51,667	70,682
Foreign Ports.	261,808	241,080	294,217
	311,116	292,747	364,899

The practical value of the quoted statistics is apparent.

The history of the coal trade during the past three years is instructive to both producers and consumers. In 1872 all kinds of business were active, manufacture was stimulated and thereby the demand for coal greatly increased. England could not supply her own wants, and the price rose with the foreign demand. In the United States the stocks held were small and urged by the stimulated condition of the general trade unusual activity prevailed, and dealers, going to the other extreme, gave large orders so that the supplies in the summer of 1873 were excessive. Then came the panic in October, and the reaction that set in affected all trades, checked manufacturing, and reduced the demand for coal. The result was an overstock in the spring of 1874, and a sluggish trade throughout the year.

The trade with the United States suffered most by the depression, and the falling off, 126,425 tons, was almost equal to the total decrease of the year's business. Of the quantity exported, Portland took 8084 tons last year for the use of the Allan line of steamers, while some 20,000 tons are annually used by the iron manufacturers of New England. Messrs. Bird, Perkins & Job, whose knowledge of this branch is most thorough, expect but a moderate increase in 1875, and that Cape Breton will not sell more than 80,000 tons for gas purposes. They report that it is

now well known that for gas making only a certain proportion of Provincial coal can economically be used in the States, and then only as an admixture with American gas coals and that unless some contingency arose that would render uncertain the supply of native coal, the imports of Provincial coal will necessarily be limited to such quantities as can be used to advantage. The quantity of coal annually required for gas manufacture in New York and New England is about 850,000 tons, but only the larger works situated in the principal cities on the coast are prepared to advantageously use Provincial with American coal, and the amount thus open this year to Provincial exporters is only about 100,000 tons.

The principal obstacle in the way of increased sales is the great uncertainity as to the first cost of the coal to the purchaser in the States, arising from the fluctuation in the rates of freight which is beyond the control of either the vendor or purchaser. An example may be illustrated by the experience of the past year. In 1873 the average rate of freight from Cape Breton to New York was about $4.00. The maximum rate was $4.50. In the spring of 1874 contractors thought they did well to secure tonnage at the apparent low rate of $3.25, but shipments had hardly commenced before the rate fell to $2.50. Still later it was reduced to the unprecedented low figure of $1.75, at which rate some 5,000 tons were shipped in the autumn. Thus there was an actual variation of $1.50 per ton on the final cost of the coal delivered. Such a possible variation in the final cost to the purchaser is a serious obstacle to the making of extensive contracts.

A mining company cannot afford to assume the risk of delivery at the minimum, nor the purchaser enter into any large contract that may subject him to pay the maximum freight. No such difficulty as this is experienced by either the purchaser or seller of American coals for the New York market. These coals are mined directly on the line of the rail roads, and the cost of transportation to tide water, and thence to the wharf of the purchaser in New York, is fixed at the opening of the season for the entire year. When, therefore, a mining company in Pennsylvania make a contract for 500,000 tons of coal, covering an entire year's shipment, they know just what their coal will net them, and the purchaser knows just what his coal will cost for the entire year, neither party assuming any risk whatever as to the rate of freight. The item

of gold premiums, of course, does not enter into the calculation at all.

The contract price of American gas coal for 1874 was $7.50 per ton of 2240 lbs., delivered in New York—a reduction of 75 cents from that of 1873. This price was satisfactory to both buyers and sellers. Now, taking the average freight of Cape Breton coal for 1873 as a basis, the estimated cost of Provincial coal delivered in New York for 1874 would have been, viz.:—

Cost at Shipping Port	$2.00
Duty	.75
Gold	$2.75
Add for premium on Gold and Insurance	40
	$3.15
Estimated freight	4.00
Currency	$7.15

At the estimated difference of value between American and Provincial coal, the latter would not have come into the market to any extent, at a cost of over $6.50. The actual cost of the coal that was delivered ranged from $6.44 down to $4.65; the fluctation in cost resulting from the changes in the rate of freight. The average cost was $5.68; but no Cape Breton mining company would have been warranted in contracting to deliver coal in New York at that price, yet the result of the year's work showed that it might have been done, and a handsome margin left for the risk.

In estimating the prospect of an increasing business in the States for our coal, it would be unwise not to overlook the above facts. Whether any practical remedy is at hand to relieve the trade of this embarrasment is a question for the consideration of mining companies if they desire to again iucrease the business that in former years proved so valuable to them. It must be also borne in mind that the purchaser of Provincial coal must crowd his receipts into about six months of the year in order to avail himself of the most favourable freights; thus necessitating a large accumulation of stocks in advance of actual requirements, subject, of course to interest on cost, storage expenses, and unavoidable depreciation in quality. None of these items enter into the cost of American coal which can be delivered every month in the year direct from the

pit. The time elapsing between the mining of the coal and its delivery at the gas works rarely exceeding one week.

The custom that prevails of banking large quantities of coal in the winter months, for shipment during the succeeding summer, has tended greatly to injure the reputation of our coal in all the markets where it comes in competition with American coal.

Owing to the reduced price of coals in England and the low freights current thence to the West Indies during the early part of 1874, the latter markets received the bulk of their last year's supplies from the English collieries. The partial loss of this trade to our shippers may be also traced to the uncertain rates of freight, and to the fact that at the season when vessels seek the West Indian markets the Cape Breton ports are either inaccessible or are visited under heavy restrictions from underwriters. In 1873 freights from Cape Breton to Cuba varied from $7.25 to $4.00 gold. The latter rate placing the coal in Cuba at a cost of about $6.00 in gold. Before any assurance could be given that no higher rate than this would rule in 1874, large orders for coal were accepted in England at a cost, delivered in Cuba, not exceeding the minimum of 1873. The bulk of the coal required for the West India markets was thus diverted to England and the close of the year 1874 found those markets very heavily stocked. The greater part of that which was sent from Nova Scotia was shipped on ships' account and was sold at ruinously low prices.

The value of a shipping port that can be made available all winter, may be inferred from the fact that vessels at Baltimore accepted $1.25 to $1.50 American currency, as freight from that port to Cuba in the month of December, 1874. This low freight quite counterbalancing the extra cost of the coal at Baltimore above our Provincial coal.

Some few cargoes have been shipped to South America but no extensive trade can be expected in that quarter. The supply of coal for that market is almost entirely under the control of parties in England, who do not look with favour on Provincial coal when any other is obtainable.

Improved Appliances.—With the increasing price of labour, and increasing demand for rapidity of production and prompt completion of enterprises once undertaken, the inducements to invent tools and machinery to substitute for human skill and brute force,

increase. The increase has of late been rapid and every year brings forth new inventions and finds new applications for successful contrivances even in well beaten paths of production and manufacture. The application of machines and machine tools to replace manual labour permits the mental power of man to be utilised with greater advantage than his physical force can be, and it enables the manufacturer to produce a more uniform character of work, and to more readily equalize the supply to the demand at a reduced cost. In other countries where works are carried on more numerously and on a larger scale, there are greater opportunities and more inducements to suggest and apply inventions. Here, we may be well satisfied to follow closely the lead of others and adopt what has elsewhere been thoroughly tested and approved.

Our miners are generally alive to the advantages derivable from the adoption of improvements and new machinery, and mention will be subsequently made in this report of many that have been adopted. But from want of precise and practical knowledge there is often a reluctance to apply that which may prove only an expensive and impracticable experiment. This wise hesitation does not, however, alone limit the introduction of improvements, but it is often assisted by a too ready acceptance of the adage: " Leave well alone "; and an indifference to emulation. Then the natural difficulties to be encountered, dullness of trade, an expended capital, an absence of method on which to engraft reforms, all furnish excuses why an indifferent system should be perpetuated by the side of improvements, elsewhere attended by economy and efficiency.

The present inactive state of our gold mines is not conducive to the general introduction of new methods of working and milling, though doubtless were they owned by companies and managed by experienced miners, many modern appliances might be beneficially adopted. The application of a safe and powerful explosive, such as dynamite, for such confined work as quartz mining is decidedly one of the steps that now appear the more likely to revive this branch of our mining industry. Its introduction, successful use, and economy compared with powder will be specially mentioned.

At the collieries the case is somewhat different, the operations, though not at present very profitable, being on a more extended scale, modifications of plant or system may well be undertaken

when economy and extended trade are in prospect. A few references will be made to some of the improvements applicable and conducive to this end.

Coal Cutting Machinery.—Quite a number of machines have been invented in Great Britain within the last fifteen years, for the purpose of relieving the miner of his hardest and most trying labour, the cutting of the coal, and, if possible, of doing the work more efficiently and at a less cost. The coal owners in this Province have also naturally had their attention directed to this matter; but no one has yet ventured to try what elsewhere has invariably proved an expensive experiment. Several companies in England have spent thousands of pounds in the endeavour to bring some of these inventions to perfection, but although many machines have been working for years, it would seem, as far as can be gathered from the conflicting reports of rival inventors, that no one can absolutely be recommended as applicable in all cases. One machine is found superior at one colliery, while its rival surpasses it at another. It is claimed that already the great object in introducing machinery for cutting coal has been attained, and that the work is now done at a less cost, and in a better manner than by hand. Still the confidence of coal owners in the economy attending the use of coal cutting machinery is but slowly growing, and until the advantages are well established and the economy of working some one machine clearly shown, it can hardly be expected that the introduction of a system of working so costly will be undertaken in this Province, while abroad it is still regarded in the light of an experiment.

The following statement made by Mr. Firth, the patentee of the pick machine, is of interest in connection with the subject:

"A machine can under favourable circumstances, cut 20 yards in an hour to a depth of 3 feet, but we consider 10 yards an hour very good work. This is about equal to the day's work of twelve average men. The persons employed to work the machine are one man, one youth, and one boy, who remove and lay down the road and remove the debris.

For the purpose of comparison, I take 60 tons of coal per day (which would come out of 45 yards of machine working.)"

Cost by Hand.

30 men cutting, filling, timbering, drilling, road.laying, blasting and all other needful work ready in the tubs for the "putter" at 4s. 5¾d. per ton.....£13. 8s. 9d.

By Machine.

	£	8s.	9d.			
1 Machine man at						
1 Youth "		5	6			
1 Boy "		3	6			
3 Men cleaning and packing at 8s. 4d.....	1	5	0			
6 men filling at 8¼d. per ton.....	2	1	3			
3 men timbering at 6s. 10.....	1	0	6			
3 men drilling and blowing down at 6s. 10d.....	1	0	6			
1-8 the cost of steam and air expenses.....	1	14	0			
Maintenance at 1d. per ton.....		5	0			
Redemption of capital at 2d. per ton.....		10	0	8	13	9
Difference in favor of the Machine, 1s. 7d. per ton				4	15	0
				£13.	8s.	9d.

Drilling Machines are coming more and more into general use as improvements are made, and the undoubted advantages that they possess are seen to be attended by economy.

Two diamond drills have been imported during the year. One from England to be used for exploring in Cumberland, and the other from the United States in Pictou County. The work done by them will be mentioned when treating of the several undertakings in the different counties. The two drills owned in New Brunswick were not employed to any great extent or to much advantage during the past year.

For shallow holes, for blasting, percussion drills are most in favour. In the United States the Ingersoll drill seems to be preferred, and it is the most highly thought of by the Government officials in charge of the excavations at Hallet's Point for the improvement of the navigation of Hell Gate.

In Great Britain the Admiralty, after several tests, have adopted the Kamotomon drill to be used in the construction of the harbour of Haulbowline, Queenstown. The same drill has been selected at the royal mines of Prussia and Saxony. In this Province no such machines are now in use, but there are operations going on at which they could advantageously be applied, and their introduction may shortly be expected.

To drive these machines compressed air is generally preferred. It has long been recognized that compressed air is the power best fitted for

coal cutting machinery and its use is extending in the application of power underground to drive locomotives instead of using stationary engines for the haulage. The liberation of fresh air instead of waste gases in the workings is another inducement, as it is a direct aid to the ventilation, while the use of steam is often a cause of much inconvenience on account of the heat and loss of power from condensation in the pipes. To extend the application of compressed air, great attention is now being bestowed on the improvement of compressors.

The Ærophore, mentioned in the last report, as an apparatus which enables men to work in deleterious gases, has been further tested and has given every satisfaction. It has been adopted in some districts in England and several have been procured and so placed as to be ready in cases of emergency.

Portable Fire Extinguishers.—At several of the pits in Pictou County, these serviceable appliances have lately been introduced and conveniently placed for use above and below ground. They have been found most useful at the inception of fires which with but the ordinary facilities for extinguishing, might otherwise have proved serious conflagrations. Strictly speaking these instruments are more "flame" than "fire" extinguishers, for they rely more on the sudden evolution of a large volume of carbonic acid gas from a comparatively small quantity of water in which the gas is dissolved, than on the vaporization of the water thrown in contact with the incandescent material. The discharge of the incombustible gas at the place of combustion drives back the atmospheric air and so the flame is extinguished. Then if the burning material be not heated to that degree that the re-admission of air does not renew the flame, the fire is of course extinguished. In mines where there is gas evolved from the face and the dry dust is liable to ignition, there, as a precautionary measure, as long so the use of powder is permitted, the acquisition of these portable extinguishers is desireable.

Direct Acting Steam Pumping Engines are getting more and more in favour at the collieries, and are largely replacing the old-fashioned, more cumberous bucket and plunger pumps, for removing such quantities of water as are ordinarily met with in mines. They are now used to discharge water in volumes as great as 9000

gallons an hour from depths of 400 feet. At the Nova Scotia Colliery, a still higher duty is exacted, a pump with a twenty-inch cylinder and six-inch plunger, forces water through a column 1150 feet long and 560 feet high. To this pump a late improvement has been added, which is, the immediate discharge of the exhaust steam into the suction pipe. The advantage of this arrangement is, it is claimed, besides the removal of an otherwise great nuisance, exhaust steam in the workings, an actual saving of power. The same arrangement was in use at the sinking of the Sterling pit at Glace Bay and the same convenience and advantage were experienced.

An objection to the use of direct acting steam pumps is that they are more liable to be "lost" by a sudden influx of water than the ordinary bucket or plunger pump, which continue to work so long as the valves keep in order. This objection can be removed by the employment of compressed air in place of steam as the motive power.

Pick Handles.—A pick-handle may seem a small thing to bestow much thought on and yet it is a matter of some solicitude to the collier who, in the course of his day's work may require as many as six or even eight picks. Those now in use are made by hand, of birch or maple; and as is to be expected when supplied in large quantities of a varying size and finish. Mr. Merriman, of Pictou has lately set up at his factory, a machine that is specially adapted for turning such irregular work as spokes and the various kinds of handles. He has supplied some of the collieries in his neighbourhood with pick handles, which, when made of well-selected wood, have given satisfaction to both masters and men. Our ordinary woods, though in general use, are not very good for this purpose, and as much expense attends the fitting and replacing of broken handles, it is most probable that the use of good Canadian rock maple or white ash, or better still, second growth hickory would pay, though the first cost would be greater.

In the Pictou field the introduction of machine made handles was followed by a considerable reduction in the number required, where, during busy times, as many as one hundred dozen a month are used. These handles being all alike do not entail on the workman the necessity of adapting his touch to each that he uses, as one made by hand requires, but one replaces another

without any sense of awkardness. So much depends in cutting coal on truly delivering the blow, that, although a skilled collier will unconsciously correct the wavering due to a bad handle, he naturally prefers a good one, and is strongly induced to destroy those that are inferior, and so swell the cost of this item of colliery expense.

Explosives.—Attention was directed in previous reports to the rapidly extending use of explosives more powerful than black powder for aiding the operations of the miner, and special mention was made of Dynamite and the benefits likely to be derived from its introduction into the mines of this country. A quantity has since been imported by F. D. Corbett & Co., the agents in the Maritime Provinces for the British Dynamite Company, and already the sales can be spoken of in tons. Its chief employment has hitherto been at the gold mines, though it is also used with marked effect at the sinking of coal pits and the driving of stone drifts.

In the article in this report relating to gold mining a comparative statement is given from a test made of the relative advantages of Dynamite over powder, and the saving is shown to be as much as thirty per cent. At other mines the economy claimed is even greater. Be that as it may, the one statement is sufficient to show that the use of dynamite does, in some cases, cheapen the cost of gold mining, and consequently enable some mines to be worked at a profit, which otherwise would lie idle.

As is naturally to be expected, some diversity of opinion prevails respecting the invariable economy of its use, and doubtless there are conditions and circumstances in mining, where a disruptive, rather than a shattering force is more advantageous, and there ordinary powder is preferable. As with powder, experience is essential to enable the miner to apply it to the greatest advantage under the different circumstances in which it is used. The nature of the rock to be blasted, has to be studied, and the weight of the charges ascertained by experiment.

There is one point that has to be borne in mind when using dynamite in this country, that has not to be considered in England, that is; that our mean annual temperature happens to be very near to the freezing point of dynamite, 42° Fahr., and that consequently cartridges exposed for some time to the chilling in-

fluences of wet ground, within the first hundred feet or so of the surface, are weakened in their action from partial congelation. But as dynamite freezes slowly, ample time is given under ordinary circumstances for the discharge of the shot with full effect.

It should not be forgotten that in winter the thawing of dynamite should be done with care and according to the printed instructions. A marvellous escape from the consequences of recklessness is reported from a gold district, where a miner placed four cartridges on a stove to thaw. As the nitroglycerine melted in minute quantities it exploded, and the cartridges popped about like parching peas; but the miner remained indifferent to these warnings until a cartridge jumped about a foot from the stove, then he realized his position, and knocking them off, left.

A description of this compound was inserted in the report of 1872, and instructions for its use are given in the circular of the agents.

Other explosives belonging to the same class, having nitroglycerine for their basis, are used with more or less advantage, of which lithofracteur seems to have the preference. But this material for industrial and blasting purposes is regarded as very inferior to the regular dynamite by the Commission on Fortifications, which, authorized by the Minister of War of France, published a memoir by the commanding officer of the Engineer Corps, containing a paper on "Dynamites," which detailed the results of experiments on the value of the blasting powders containing nitrogen.

In England the compressed gun cotton of Dr. Abel, has found more favour since it has been discovered that it can be exploded by means of a detonator when wet.

Handling Coal.—In the Anthracite fields of Pennsylvania the most noticeable feature of a colliery is the breaker where the coal from the pit is sized, cleaned and often washed to make it free of dust. The advantage derived from careful manipulation is well recognized, and is proportionate to the care bestowed.

With bituminous coal the advantage is not so apparent, and this in part accounts for the neglect which seems almost invariably to be in the inverse proportion to the amount of care requisite. The more friable nature of this mineral cannot be altogether guarded against, even by the most careful handling, and a

certain amount of disintegration will take place every time it is removed. But because this is so, it is most unwise to neglect care altogether and treat coal as if size were a matter of the last consequence. Something has been done at some of the collieries, but much more can be done to save brittle coal from breakage.

"The South Wales coal is of a brittle character, and at Cardiff it has been found necessary to take special precautions for reducing the loss by breakage that occurs in discharging the coal wagons into vessels' holds. The first appliance for this purpose is the anti-breakage crane. This is a square iron bucket holding one ton of coal, made hopper-shaped, with a hinged flap for discharging at the bottom; it is suspended from an independent light jib crane, fixed at one side of the tip frame. In commencing the loading of a vessel, this bucket is filled from the shoot, and then lowered to the bottom of the hold, and emptied by pulling up the bolt that secures the flap door; the process being repeated until a conical heap of coal is tipped high enough to nearly reach the hatchway. The shoot is then allowed to discharge freely, and delivers close down upon the heap, so as to prevent any breakage of the coal by a vertical drop. The point of the shoot is contracted to check the fall of the coal down the incline, so that the shoot is choked up by the coal, and the discharge from the point requires a little assistance by hand, and is thus kept under control whilst the bucket is being filled. * * * * The buckets are also used for discharging ballast or ordinary merchandize, and for filling into wagons the small coal that passes the screen in the shoots on to the vessel's deck."

At the West and East docks the balanced tips are used; at the New Basin improved hydraulic tips have been introduced but which being unsuited for this climate need not be further referred to. "Each balance tip is capable of shipping 560 tons of coal per day of ten hours. This tip consists of a suspended cradle or platform sliding in vertical guides, and supported by balance weights connected on each side by chains passing over pulleys at the top of the framing upon which are brakes for controlling the motion of the cradle.

The balance weights are sufficient to raise the cradle and empty wagon, but not equal to the load when a full wagon is upon it. The wagons are each discharged from an end door into an inclined

shoot extending over the hatchway and having screens in the bottom for separating the small coal. The cradle and full wagon are lowered by means of a brake until the wagon is at the top of the shoot and sufficiently tipped for discharging the coal. The brake is then released, the cradle and empty wagon ascend, and the wagon is run off into a siding. The level of the shoot is adjusted to the actual height of each vessel, so that no greater height of fall is given to the coal in any case than is necessary for getting it into the hold, in order to reduce the breakage as much as possible. For this purpose the butt of the shoot, where attached to the frame of the tip, is made to slide in vertical grooves, and is supported by chains, which can be raised or lowered by a hand winch, the greater portion of the weight being counterpoised by a balance weight. The point of the shoot is also carried by similar adjustable chains, so that the inclination as well as the height of the shoot can be changed as desired. Notwithstanding all these precautions, the proportion of slack that is found in the coal when the ship is discharged at the end of the voyage, is generally too large in amount to be satisfactory, and is evidently due to the want of care in trimming the coal. To practically test this supposition, a vessel was loaded at the Bute docks by means of barrows filled direct from the shoot and lowered into the hold and wheeled at once into the far end so as to avoid any subsequent trimming. The result was, that the coal was delivered in such exceptionably good condition, that the extra cost was much more than covered by the reduction in loss from slack."

In using the balance tip, the ordinary method of tilting the wagon is to attach a suspended chain on to the tail end and then lower the cradle by the brake. This entails a loss of height which is a serious matter as the size of vessels loading coal has gradually increased. But by having the platform of the cradle centred on trunnions, and controlled by a sector and endless screw, side, as well as end discharging wagons can be used with less loss of height than by any other method.

Many improvements have been made in the methods of handling coal since the first cargoes were exported from the Province but seeing what has elsewhere been done is strongly suggestive that there is still room for more. At the Pictou Collieries more attention has been given to this subject than at those of Cape

Breton. The coal being harder it more plainly shows the care bestowed on its preparation.

To reduce the breakage to which coal is subject when thrown, as it ordinarily is, violently from a box on to the screens, tubs with end doors are frequently used, but these are objectionable on account of the increased expense. A late patent by a Mr. Rigg of England does away with the objectionable features of both systems for it allows the ordinary tub to be used. His patent tipping machine consists of a wrought iron rotating frame, like the common cradle, so balanced that it is self-acting both in its forward and backward movement and under the control of a brake. The improvement consists in the simple addition of a projecting plate on the front of the cradle which, rotating withit, receives the coal from the tub and carries it down to the screen where it slides off the plate without a fall on to the bars.

The screening at some mines is better done, is more thorough, than formerly, and the slack is put into more marketable shape by the extraction of the dust. To still further improve the quality of the slack it is proposed to wash it at the Nova Scotia Colliery and it is likely the proposal will be carried out.

For loading the vessels from wagons, shoots are replacing the antiquated drop, still the appliances for this purpose are crude in comparison with the arrangements adopted at Cardiff. The style of wagon too in use is, unfortunately, not the best adapted for saving brittle coal from breakage. Hopper shaped wagons are in all but general use and it is a pity that with the experience of England for guidance, flat cars with end or side doors had not been adopted instead of wagons with bottom doors, for the latter letting the coal down with a drop helps to break it. They are also more troublesome to manage, and slow to empty when the coal is frozen in them during cold weather.

The consideration of screening naturally associates in the mind the uses to which the products can be put. At some of the mines all the slack produced is consumed about the colliery. At others much is left underground or in waste heaps on the surface. The slack of the Pictou coals is mostly all disposed of, but that from the more tender coals of Cape Breton has yet to find a market, at least the greater part of it has, for the quantity sold is small when compared with the total production. With the exception of the

Gowrie Colliery, at no place in the Island is the slack cleaned and prepared for market. During the last year 8671 tons were sent to the United States, and if there is a demand for that quantity it is natural to suppose that a little more care in the preparation, at an expenditure of but a few cents a ton, would extend that market. Were the slack of other coals also prepared and freed from dust, doubtless the demand would increase.

There is a use to which the slack of the soft coals of the Western States is put which might well be encouraged here:—its consumption in base-burners for heating halls and offices. Here in the East we have been in the habit of looking on anthracite as the only kind of coal that will burn in the base burner a stove highly prized for its cleanliness, for the little attention it requires, and for the steadiness with which it emits the heat. But in the West a base burner has been invented and used for years, that consumes soft coal and has every good feature that the hard-coal burning Beacon or other stove possesses. This stove, the Dubuque, has been much improved of late, and within the last few months quite a number have been imported into Halifax and Pictou, and, when used with Pictou slack, have given great satisfaction. With other non-caking coals as those of the Emery and New Campbellton Mines, it can probably be used with equal advantage. It is very complete, and brings into almost perfect practice the principles that have long been recognized as theoretically correct for the absolute combustion of bituminous coal. As in the ordinary base burner, air is supplied to the ignited fuel through the ash pit, and the magazine is placed directly over the grate. Round the magazine there is an additional annular space from which pours a thin stream of fresh air directly down on the coal burning in the grate and supplying oxygen completes the combustion of the half consumed gases.

As the comfort and advantage of using base burners become known the consumption of anthracite increases although it costs 50 per cent. more than our own domestic coals, and double the price of slack, which can be utilized for the chief purpose for which hard coal is imported. A reference to the table of imports will show how extensive this trade is already becoming.

Now in Nova Scotia with the variety of bituminous coals we possess there should be no necessity for importing that class of coal at

all. Coke can be made to replace it at the founderies, and slack with the Dubuque base burner, for heating purposes. Every exertion should be made by our mine owners to legitimately retard the growth of this trade by showing that our coals can supply all the wants of the people. But if they are quietly allowed to supply themselves with the ordinary base burner and get in the habit of using hard coal, the difficulty of eradicating it from the list of imports will be greatly increased. A combined action should be made to practically show that our own soft coal can give to the consumer every advantage that the foreign hard coal possesses, with the additional important advantage, economy.

The Mines Regulation Chapter, now in force, calls for the special attention of mine managers to certain matters of routine which, as a general rule. were, outside of the Pictou district, not complied with by managers until their attention was personally called to the necessity of so doing. The inattention probably arose not so much from unwillingness as from that ordinary disposition to pay little heed to anything more than the general tenor of such a statute, which is read after the manner of the moral reflections in a novel;—glanced at, recognized as all very right and proper for the guidance of the masses, but quite unnecessary for the consideration of the individual.

Hitherto it has been thought sufficient to admonish when neglect appeared to arise from inattention alone and not from a spirit of opposition. But there is still a want of familiarity with the special requirements of the chapter, and an absence of that regard which must be held, so that due advantage be obtained from the existence of such a statute. This, it is hoped, will in time be remedied although while any man is permitted to occupy the responsible position of manager without being required to have had a special training, the full benefit of the Act cannot be expected. And the sooner a system requiring managers to hold certificates of competency is introduced, the sooner will the standard of mining in this Province improve, and favourably compare with those of other countries.

It will doubtless be interesting for those now holding such positions in this country, to know what is required of candidates for manager's certificates in England, and a speciment set of examination papers is here appended.

The Subjects upon which Candidates are Examined for Certificates.

1.—The Coal Mines Regulation Act, 1872. General knowledge of.

2.—Ventilation. Theoretical and practical knowledge of.

3.—Modes of working coal, ironstone, and other minerals, having reference to the nature of the roofs and pavements.

4.—Sinking, fitting, and pumping, with theory of steam-engine.

5.—Winding, haulage, and strength of materials.

6.—Underground surveying and drawing.

7.—Arithmetic up to fractions, with calculations of areas and velocities.

The questions put at the Examination for Certificates of Competency under the Coal Mines Regulation Act, 1872, held at Edinburgh, Nov. 1 and 2, 1873, were :—

Coal Mines Regulation Act, 1872.

1.—When underground workings are approaching old wastes of which no plans have been kept, what special dangers are the workmen exposed to, and how would you provide against them.

2.—State shortly the general rules as to the use of gunpowder or other explosive material in mines where inflammable gas has been noticed.

3.—What is the requirement of the Act as to the number of shafts in use at each mine, and state shortly the exceptions to it that may be allowed?

4.—In mines where there is inflammable gas, what special precautions are to be observed by the workmen and by those in charge of the mine?

5.—Give a short statement of the requirements of the Act regarding man-holes or places of refuge on underground roads?

6.—What limitations does the Act impose on the employment in mines of young persons between 12 and 16 years of age?

Ventilation.

1.—Explain why artificial ventilation is more reliable than natural Describe the different modes of producing artificial ventilation?

2.—For an extensive but shallow working, whether would you adopt a fan or a furnace, and give your reasons?

3.—How do you measure the velocity of an air current, and at what velocity would you have air travelling through the workings?

4.—Give your reasons for making air-courses as large as possible. Explain the advantage of splitting the air?

5.—Describe the barometer, and explain how it indicates the atmospheric pressure. What is a water-guage, and of what use is it?

6.—Sketch what you consider a good furnace for a pit 60 fms. deep, with 100 men, giving its dimensions and relative position to the shaft?

7.—Under ordinary conditions as regards gas, what quantity of air would you have circulating in a pit with 100 men; and what is the least

dimensions you would have the air-courses. Give observations regarding the necessity of having the air-course *uniformly* large.

Modes of Working Coal.

1.—Explain the ordinary conditions for adopting the long wall and the stoop and room working?

2.—In a seam having a dip and rise of one in six, and the direction of the plane of the coal being to the full rise, sketch what you consider a good form of long wall working for it, having regard to the ventilation, direction of the drawing-roads, &c?

3.—Under the same conditions, give sketch of a stoop and room working by which the greatest percentage of the seam can be got out.

4.—In a 4 ft. seam of coal 80 fms. deep, what size would you make the pillars, having regard to the ultimate extraction of the greatest quantity of coal combined with safety to the workmen?

5.—Give a rough section showing the different seams of coal in your istrict?

6.—Under ordinary conditions as regards roof and pavement, give your observations on the cost of working a 4 ft. seam of coal by stoop and room, and a 2 ft. seam by long wall, embracing the oncost necessary in each.

Sinking, Fitting, and Pumping.

1.—Sketch what you consider the best form of a shaft, 100 fms. deep, for an out-put of 300 tons a day, including ordinary provisions for pumps, and showing arrangement of slides and cages, with dimensions?

2.—Explain how you would prevent water met with near the surface from getting into the shaft.

3.—How many gallons are there in 1200 tons of water, and describe the general arrangement and size of pipes for lifting that quantity daily from a pit 80 fms. deep?

4.—Describe the class of engine best adapted for the above work, size of cylinder, stroke, and strokes per minute.

5.—Explain fully the advantage in a deep shaft of having a series of lifts instead of one long lift to the surface.

6.—Explain the action of a syphon, and its use and application in draining mines.

7.—State the various methods you know of pumping water out of a dip working.

8.—Describe the best kind of boiler for the safe and economical production of steam.

Winding and Haulage.

1.—Explain the forces acting on a self-acting inclined plane. Compare the friction of ordinary tubs on tram rails with the friction on a well made railway.

2.—Under the usual conditions of tram rails and tubs, what is the flattest gradient for a self-acting inclined plane 300 fms. long, to pass 100 tons in 8 hours? Sketch the best arrangement of it at the top.

3.—Explain the best mode of drawing coals along a level road, or one not dipping sufficiently to take away the rope.

4.—Explain why conical drums are necessary in deep shafts.

5.—Whether are chains, wire ropes, or hemp ropes preferable, and give your reasons. Giving the breaking strains of a rope, what is a safe working lode for it?

6.—State from your experience what is the cost of haulage underground per ton per mile. How does it compare with the cost of a mineral railway above ground? Give your observations on the different modes of haulage known to you, and how you think they might be improved.

7.—Accidents frequently happen on headings where the loaded tubs are taken down with snibbles, by the full tub running into the one before it or into an empty one coming up; how would you remedy this, and still retain the use of snibbles.

8.—In speaking of machinery, what is meant by horse-power?

Surveying and Drawing.

1.—Sketch on paper as near you can the following bearings of a survey 82° N. E., 68 links, 51° S. E. 95 links, 63° N. E. 79 links, 20° N. E. 97 links, 35° N. W. 87 links, 87° N. W. 140 links, 52° S. W. 140 links and 48° S. E. 85 links.

2.—Describe the compass, and explain the circumstances under which it is unreliable.

3.—Explain what is meant by the scale of half-an-inch to a chain.

4.—Describe the process of surveying underground.

5.—Describe how you would plot the same survey on paper, and name the instruments you would require to use.

6.—Why is it necessary to make deductions from the measurements to the rise and dip in steep workings, and how would would you find the correct measurements?

7.—Suppose you were driving towards an old waste which is shown only on a plan 20 years old, explain the precautions to be taken as regards the meridian.

Arithmetic.

1.—Add together 507 tons 13 cwts. 2 qrs. 12 lbs., 1670 tons 15 cwts. 1 qr. 8 lbs., 47 tons 14 cwts. 3 qrs. 14 lbs.; and 498 tons 9 cwts. 2 qrs. 7 lbs.

2.—How much would be required to pay 75 men a fortnight's wages at the rate of 27s. 4½d. each per week?

3.—How many cubic feet of air will pass per minute through an air course 5 ft. by 7 ft. when the air current is travelling at the rate of 20 yards in 15 seconds?

4.—What weight of material will have to be raised in sinking a shaft 15 feet by 5½ ft. and 40 fms. deep, supposing it averages 130 lbs. per cubic foot?

5.—How many gallons of water will be pumped in an hour by an engine making eight strokes of 7 ft. each per minute, the diameter of the pump being 15 inches?

6.—How much power would it require to send 10,000 cubic feet of air per minute through an air-course having an area of 40 square feet, and how much would the power require to be increased to do it if the area of the air-course was only 20 square feet.

PLANS.—Among the special requirements of the Mines Regulation Chapter which need careful and close attention, that relating to the keeping of plans of underground workings is well recognized as essential, though it is not so thoroughly complied with as it might be, few of the plans being so complete as to give, as they should, every information requisite for a thorough understanding of the workings, without necessitating any verbal explanations whatever.

It may not be amiss to mention what an accurate plan should show. To be complete it should give the position of the pits in relation to the nearest boundary of the estate; the position of the shafts, staples, inclines, goaves, the furnace, &c., the permanent stoppings, over-casts, regulators, and doors; the direction of the faults or steps and their extent: the true and magnetic meridians, the scale on which it is constructed, the date of the last survey, and a section, giving the dip of the measures with the relative positions of some points on the surface with others in the workings.

The necessity for complete and accurate plans may not, at first sight, seem to be great, as most of the pits in this country are scattered, yet a little consideration will recall to mind the proximity of some, and the relative position of others to large bodies of water, in which cases it is requisite to know the thickness of the intervening measures to ensure safety.

It will be sufficient to mention one case in the Province to show that not only should plans be perfected, annually or semi-annually, as the custom may be, but that also a record should be kept that would enable (as the law requires,) the further extension of the workings, since the last survey was plotted, to be at any time laid down with approximate accuracy.

After the Drummond explosion in May, 1873, it became a matter of much importance to know the thickness of the coal left as a barrier between the adjoining workings: for it was desired to flood the mine and so extinguish the fire. The officials of the colliery who could make the information positive and complete were among the lost, and the record book of monthly measurements was, without their aid, unreliable for the

purpose of showing the extension of the workings since the last survey was plotted on the plan, consequently no reliance could be put on the thickness of the barrier being equal to withstand a head of water.

It would also be well if a rough working plan were kept by each undermanager on which he could note the changes made in the air courses as the workings progress, and so be enabled to study to supply the air to the best advantage.

Weighing.—In previous reports mention was made of the different systems in vogue for estimating the quantities of coal on which royalty was payable. On this subject little need be at present said. It may, however, not be amiss to remark that some of the coal owners, who considered the requirement that all coal should be weighed was burdensome, now find it for their advantage to weigh all coal shipped to Montreal and other ports, where, they believe, a system of allowances detrimental to their interests is in practice.

Custom has permitted coal miners to regard the royalty as not payable until sales have been made, while a strict rendering of the terms of the Act, would require the royalty to be paid on all the coal extracted from the mines, and a drawback to be allowed on all slack separated, and all coal consumed for colliery purposes.

Were the practice in accordance with the strict rendering, it would necessitate the weighing of all the coal raised from the mines, and enable the payment to the men to be by weight, instead of by measure, as is the more common practice. The systems of paying otherwise than by weight are further objectionable, because they offer premiums to trickery and laziness. When the tub or box is taken as the measure, a knowing loader will so trim the coal as to leave spaces unoccupied and give to the tub the appearance of being full, or he will break up the lumps, knowing that small coal has a greater bulk per ton than large coal. When the payment is by yardage, on the measurement of the space excavated, and there is in the seam fireclay or stony coal to be rejected, much good coal is often wasted and thrown back with the refuse by the loader who has no direct interest in separating the good from the bad.

This objection is especially felt at the Picton mines, where the seams pitch steeply, and there is much refuse to be rejected. The managers of these mines recognize the desirability of changing their

system and to pay by weight and not by measure, but they are unable at present to combine for this purpose. The opposition on the part of the workmen to this change offers a strange contrast to the anxiety of their fellow colliers in England to have the system compulsory as they at last obtained, after much resistance, by the passing of the Act of 1872. To say the least, it is interesting to note the directly opposite conclusion arrived at by separate bodies of men having one interest in common, and influenced by the same desire to get the highest wages for their labour. It shows how carefully local prejudices should be considered before the true value of objections raised, even by large bodies of men, can be determined.

At Sydney mines, where this system has been in practice for some years, satisfaction is given to both masters and men, and it is one that the country is equally interested in with the owner as it affects the yield per acre.

COAL MINING.

CUMBERLAND COUNTY.

Comparing the business of this county with that of former years a satisfactory increase is noticeable. The sales for the past year having been 88 per cent. in excess of those of 1873, and amounted to 49,599 tons. Had it not been for the late general depressed condition of the trade the projected railway from Spring Hill to Parrsborough would doubtless have been undertaken, and in a year or two given further facilities for the development of the business of the country. As it is, the present means of transportation are not adequate for a rapid or even greater extension of the trade; Dorchester, the present shipping port for Spring Hill coal, is too far away for economical shipment, and the cost of rail-carriage to St. John is too great to allow of much competition in that market with the cheaper seaborne coals.

The revival of the trade in 1873 again drew attention to the mines once worked on the Macean and Hebert rivers, but no steps have as yet been taken to practically re-open them. Mr. Hibbard is opening a seam, by a slope now about 100 feet in depth on the area leased to Gilbert Seaman, underlying that once worked by the Victoria Company on the Herbert river, and he considers it is the continuation of the Joggins Hard Scrabble seam.

Messrs. Smith and Blight have been diligently prospecting on their area; lying between the Styles mine and the St. George colliery, and have formed a company, "The New Dominion Coal Company," to work the property. They have opened the seam in a brook ravine not far from the eastern boundary of the area, and have driven an adit in a westerly direction, under the hill a distance of three hundred feet. The seam dips at an angle of 44 ° and is about five feet thick, with a 20 inch parting of firm clay. The coal, they report is much liked in Amherst as a house coal. Twenty four feet to the deep of this seam is another about three feet thick.

A good deal of prospecting was done in the spring on the Hibbard areas by the Spring Hill and Parrsborough company, and the measures shown to be sharply deflected to the southward and eastward. The seams were not traced more than a quarter of a mile when they were lost, under the heavy surface cover. Evidently the further extension of these Spring Hill beds, if their continuations exist at all in this direction, will be proved with great difficulty and much cost.

Mr. Livesey still indomitably perseveres in his search for coal on his areas, and has imported and set up an English made Diamond Drilling Machine. that works with great precision. He has kindly furnished the following interesting memorandum that helps to give an idea of the capacity of the machine.—"Referring to your recent enquiry I may inform you that the total depth of borehole No. 2 made with our English Diamond Boring Machine was 715 feet: $5\frac{1}{8}$ inches in diameter at the top and $3\frac{1}{8}$ at the bottom. The time occupied in boring was 48 days at a cost of about $1160, including repairs and renewal of diamonds. but exclusive of interest, depreciation and royalty. As a general rule, of course, the cost of boring increases with the depth. Thus the cost of the fifth hundred feet was more than twice that of the first hundred. But the rate of increase may be modified by the nature of the strata for I find that the sixth hundred feet was only fifty per cent. in excess of the first. The greatest depth bored in any one day was 36 feet. The average number of persons employed was five. The cost of the machine with 1000 feet of rods was about $8,500 in England or say $10,000 erected in Nova Scotia. The bore hole, after passing through slate and sandstones, ended in the conglomerate."

When considering the first cost it should be remembered that the value of such an instrument consists chiefly in the thoroughly satisfactory information it gives of the measures explored. A core of every stratum can be extracted and as critically examined as can be done by means of a pit which allows the miner to place himself in immediate contact with each of the measures sunk through.

At the other end of the Spring Hill district, valuable explorations have been made on the Black areas, and some of the small Black river seams proved to extend for over a mile to the

westward, and to be curving round apparently to conform with those of Spring Hill. One seam has been proved to thicken to something over three feet which may make it a workable bed.

COLLIERIES.

SPRING HILL.

Coal has been won from the Hall slope, which takes the strip along the crop of the seam outside of the General Mining Association's area, while the more permanent establishment at the East slope has been preparing. Much work has been done in building dwellings for the men, erecting workshops, clearing a coal floor, finishing the railway, and otherwise getting the colliery in shape for continuous and systematic working.

The East slope has been sunk on the seam, some 822 feet, at an inclination of 40°, and a winding engine with an eighteen inch, cylinder and nine foot drum erected. This engine has, what is unusual on colliery machinery, wooden cogs on the follower wheels and the drum revolves with less noise than the ordinary gearing, iron on iron. Water for the engines has been brought through wooden pipes a distance of 2300 feet.

SCOTIA.

The working of this colliery remains still on a small scale commensurate with the local demand.

JOGGINS SOUTH.

The distant workings of this colliery have been closed, and operations confined to the new lift on the extension of the slope. Second counterbalance ways have been driven up 400 feet distant from the first, and the pillars that were left from the workings off the first have been removed and the roof allowed to settle. The quantity of fire clay from the parting that has to be thrown back into the waste favours this mode of working.

The shipping facilities have been improved by the addition to the pier of a block, built by the Government grant of $10,000, running out from the shore 160 feet opposite the end of the wharf; thus making a dock in which vessels can lie more secure than they hitherto could.

Instead of lowering the coal wagons by a counterbalance from the top of the cliff, and emptying them from the wharf, as the

practice has previously been, the coal is now emptied at the top into a shoot 140 feet long inclined at an angle of 25°, and the shoot is kept full. The coal is drawn off as required, regulated in its descent by checks and doors.

A furnace 6 feet wide, placed at the bottom of the old shaft, has improved the ventilation.

PICTOU COUNTY.

During the first nine months of the year the business of this county was fair but never brisk. The whole year saw an improvement to the extent of 13,942 tons over the previous season, but contracts, that otherwise might have been had, were lost by the coal owners holding off for the prices of the year before. Late in the year a reduction of 12 per cent. in the wages of the men led to a strike which somewhat further reduced the quantity sold.

The borehole in search of coal below New Glasgow was continued with a Diamond Drilling Machine to a depth of 734 feet, when mottled marls, such as are found below the coal, were struck. At the same time a run of sand occurred and the rods became jammed in the hole, and when the endeavour was made to withdraw them, they broke and 250 feet together with the bit and core-barrel were irretrievably lost. A run of sand once or twice took place before on the withdrawal of the rods, and to save expense the hole was not tubed, but only cleaned out, and the the boring resumed. Mr. Logan now proposes to test the measures near Cariboo Island where some coal has been found. He has lately put down another hole at the Hardwood hill which shows the cheapness and serviceableness of the American drill. His account of its performance is here added.

"We began to bore on the 21st December and up to this date —the 29th January—have worked 24 days and bored to a depth of 534 feet. The measures pierced have been fireclay and freestone beds. The best day's work, when using the hollow bit and taking up the cores, was 27 feet, and when working with the solid bit, 31 feet. The machine cost $5,000. It is operated by one man and a boy, but owing to the late cold weather we have had to have an extra hand to keep the pipes from freezing at night.

EXPENSES.

Moving machine and erecting shed	$111.50
Wages to date	138.00
Fuel	90.00
Interest, renewals, &c., @ 50 cents	267.00
Total cost boring 534 feet	$606.50

An average cost of $1.14 per foot. Doubtless the same work could be done cheaper during warm weather."

ACADIA.

The workings of the new lift have been pushed on and ample room made for a number of men. A return air course has been left up the side of the barrier and the pillars have been worked back toward the slopes. The pillar working has been more satisfactory and profitable than hitherto, a larger percentage of the coal being obtained. The 7 pillars in the lift are worked in one face to the full rise taking the upper 9 feet and leaving the bottom bench. After the pillars have been worked back some 60 to 70 feet, the roof is allowed to fall and settle and then another slice is taken off the pillars leaving a few yards untouched to maintain the roof at the edge of the broken.

A new eight-inch plunger pump has been put in the pit to replace one of six inches. The ventilation of the mine has been improved, more attention having been of late bestowed on this important matter.

On the surface the sidings newly arranged give more room for full and empty wagons. The company have purchased a tank-engine and now deliver the wagons to the Provincial railway at Stellarton to be taken thence to the landing by the Government locomotives. This gives more satisfaction than the old arrangement by which the railway undertook to take the coal directly from the screens.

ALBION MINES.

At the Foord pit the levels have been further extended and the north level has cut a fault that does not show in the workings immediately to the rise of it. Its course is nearly parallel to the other faults of the section. The stone drifts to intersect the deep seam are still in course of being driven.

On the surface the machine shops have been collected under one roof near the Fan so that one engine may drive all the work. New screens have been put up for the bank coal and the regular screens covered in to protect the men when working during broken weather. The weighing scale has been removed to the wharf, the better to comply with the requirements of the Mines Regulation Chapter respecting weighing.

At the Cage pit the sinking of the incline plane has been continued and the mine drained by means of a special steam pump which receives its steam through 900 feet of pipe. The boiler and the more exposed pipes are served with Spencer's patent, the rest with straw, by which means 60 lbs. pressure on the boiler give 40 lbs. at the pump.

The mine is worked in the ordinary way. The rooms are driven horizontally, and the coal is lowered to the main level by means of counterbalances.

561 tons of Coke have been made, and four new ovens are in course of erection.

INTERCOLONIAL.

The new, or No. 4, slope mentioned in the last report as started to the south of the fault that bounded the old workings, was continued to a depth of 1100 feet and coal was won on either side between the faults. At the same time the old workings were in part opened up. An overhead brattice was carried down No. 1 slope, and the crosscuts built up as the work of opening out the slope progressed until the water was reached at a depth of 600 feet. Then the old workings on the north side where there had been no fire were opened and swept free of after damp. The coal that had been stowed in the bords in this part of the mine was recovered and the two lower rows of pillars robbed. Simultaneously the work of opening the south side was cautiously conducted and is still progressing, happily without finding any indications that fire exists in the crop workings on that side. When all doubt on this important matter is removed the work of pumping out the water which now fills the lower part of the mine will be next undertaken. It is expected that in the course of the year the whole of the old workings will be made accessible.

While the work of exploration was going on the bodies of some

seventeen of those who were lost were recovered. The rest are supposed to be under water, some in the slope and the others about the bottom of the pumping shaft.

The fierceness with which the fire must have raged, is indicated by the depth to which the coal was coked, which in places on the sides of pillars is to a depth of nine and ten inches.

On the re-opening of No. 1 slope the working of deep seam was abandoned.

NOVA SCOTIA.

On further extending the slope to the deep, a fault was cut which does not show in the workings above, and which appears to run nearly parallel to the boundary line. The new extension is 470 feet, making the total length of the slope about 1600 feet.

The system of working the pit has been changed. Instead of carrying the boards to the full rise and letting the coal run down shoots into tubs standing on the levels, the rooms are now driven horizontally, the coal filled at the face, and the tubs raised and lowered from the several rooms by means of counterbalances. The breakage is much less by this than by the old method.

Some changes have been also made in the machinery. The winding engines which before stood with the cylinders nearest to the mouth of the slope, have been reversed to allow the ropes to lead direct, and to save them from making reverse bends which are so destructive of the life of the rope. The gauge of the pit roads has been reduced to 2 feet 9 inches to enable the tubs to be more conveniently run in to the rooms.

An additional boiler of a similar description to those in use has been added and a machine shop with a separate engine and lathe has been attached. A special steam pump 20 inch cylinder, 30 inch stoke and 6 inch plunger, has been placed below to discharge the water of the mine. Steam is carried down to the pump which forces the water in one lift to the surface, a vertical height of 560 feet.

A new overlying seam has been found on the smoky town road where the line separating the Halifax and Nova Scotia areas crosses, and a trial pit, sunk on the seam to a depth of 15 feet, shows some 4 feet 9 inches of pretty good coal.

Vale.

During the year this colliery got into operation and shipped some 38,000 tons. On the surface the accommodation for workmen was increased and some thirty-four double blocks and seven blocks of four tenements each were completed. A locomotive was purchased to run the wagons to and from the siding at New Glasgow, and the pier finished below the Pictou Landing for the shipment of the coal.

Under ground, the rooms have been driven horizontally 15 feet wide between pillars left 12 feet wide, and 60 to 70 feet long. Two counterbalances have been put up on each side, one to each landing.

The pit tubs adopted are 4 feet 9 inches long by 2 feet 8 inches wide, and 2 feet 1 inch high. They have 10 inch wheels; with a 2 foot wheel base, and run on a 2 feet 5 inch gauge.

Mitchell and Barton have continued to mine small quantities of coal from their area, which they are able to dispose of to the country people of Sutherland's river and that section of the county.

CAPE BRETON.

While the trade of Cumberland and Pictou counties was in excess of the previous years, that of this county was far behind and not more than 65 per cent. of that of 1873. The falling off appears most noticeable in the trade with the United States, where the demand for Provincial coal was unusually light. Then the fall in the price of coal in England enabled vessels bound for the St. Lawrence to carry coal out as ballast, and so undersell Nova Scotian coal that had to pay freight. In Nova Scotia proper the railways enable some business to be carried on during the winter months, but in this island there is little local demand, and the practice of banking has alone to be resorted to to give the men employment at that season.

During the year the railway of the Cape Breton company was extended from the Reserve and Emery collieries to Louisburg and once again, after more than a century had passed, has that port become a scene of industry. It is expected that the railway and shipping pier will be completed in the spring, when the company

hope to control the western trade by obtaining lower freights than can be secured to the eastward of Scatarie. Louisburg being an open port it is expected that coal will be shipped from thence all the year round, and that steamers bound across the Atlantic will make it a port of call for fuel.

It is also proposed, it is said, to erect both iron and copper smelting furnaces. At present the copper ore from Tilt Cove Newfoundland, is shipped direct to Swansea, but the owners of the mines are of opinion that it would be cheaper to ship it to Cape Breton, for smelting, and then send the resulting regulus to Swansea. It is to be hoped that this idea will prove feasible and be carried out. As for Iron smelting, all that is required is a general revival of that industry, for Cape Breton is in itself abundantly supplied with all the necessary raw products that should make the manufacture of iron a profitable business.

COLLIERIES.

SYDNEY.

This and Lingan are the only mines now worked by the General Mining Association of London. The operations as Sydney have not been on the usual scale or equal to the facilitie, of so extensive an establishment, the production being very much less than that of former years. Various circumstances have contributed to this result, but the principal cause has been the reduction of the working space in the pit consequent on the accumulation of water in the deeper portions of the mine. The water made in the dip workings had been for some years allowed to collect in the lower places with the expectation that on the new shaft at Lloyd's Cove being completed it could there be much more easily removed than by raising it at the Queen pit. The difficulties, however, experienced in sinking through the heavy feeders of water that were met with prolonged the completion much beyond the time anticipated, and a larger body of water, in consequence accumulated than was at first intended. A number of working places had therefore to be abandoned, and the men removed to a new section of the pit, where the seam was for a time found to be troubled, and where from its irregular thickness much delay was occasioned in the winning out of new places. The production was in consequence materially affected. Considerable improvement

was, however, made in the output during the season, and the productive powers of the mine almost restored. The water in the lower workings is for the present kept from further encroachment by two steam pumps placed in the mine and supplied with steam from the surface.

In the course of the year the effective shutting off of the feeders in the new shaft was accomplished and the sinking rapidly progressed in dry ground. In one month 66 feet were sunk; and in November last the coal was reached at a depth of 681 feet The seam is of the usual thickness, 6 feet, and of a quality that will maintain the reputation of the widely known "Sydney Coal." The usual requirements of a pumping shaft, a sump and standage for water, are now being provided and the lower set of pumps is now being placed in the shaft. Meanwhile the shaft holings have been made and a drift is being driven to the rise, by which it is intended to tap the water in the Queen Pit workings and bring it to the pumps. This connection, it is expected, will shortly be made and its completion will render unnecessary the further use of the steam pumps. It will also enable the bords to the deep to be re-opened and a greater working space provided.

Preparations are at the same time being made for raising coal at the new pit during the ensuing season and an increased output may therefore be expected. The branch railway to connect with the new winning is nearly completed and the rails will be laid early in the season. A new wharf, which will be 500 feet long, is being built at the Bar, and while giving additional means for shipping, will give what is much needed greater depth of water for the large class of vessels which are now often engaged in the coal trade. The house accomodation has been further increased by the addition of 32 tenements which are of an improved style and well adapted to the requirements of the occupants.

The ventilation of the workings has been improved by the increase of the furnace power. A second furnace 6 feet wide with 135 yards of heating column has been added. To reduce the consumption of fuel and to protect the firemen, the boilers have been shedded over.

Lingan.

The output from this colliery is again much below the usual production: but is almost entirely due to the depressed state of the trade. The position of the mine as regards working

space, which was much contracted by the accident in 1873, is rapidly improving; new working places having been won out to the North and to the deep. Little, however, was done after the commencement of the shipping season and operations were discontinued early in the fall.

As it was apprehended that the fire which occurred at the time of the accident might not be thoroughly extinguished, it was considered advisable to allow the workings to fill with water. A recent examination showed the fire to be extinguished and the water is now being pumped out with the view to the resumption of work this coming season in the places formerly in operation.

On the surface, foundations are prepared for a new winding engine of a more modern description than the one now in use; and 16 tenements have been added to the house accomodation.

THE CAPE BRETON COMPANY.

In pursuance of the Mines Regulation Chapter the agents of the Reserve, Emery and Schooner Pond Collieries reported that these properties have been transferred to the above named company, but no legal transfer has yet been made and the leases still remain in the names of the respective companies that held them last year.

RESERVE.

No coal has been mined at this colliery since the summer the stock on hand then being sufficient for the demand. In the mine the main slope has been extended to a length of 2040 feet, and the west slope 1320 feet. The rooms are driven 16½ feet wide, leaving the pillars of an equal width. The dip of the seam is one in twelve. At the outcrop a parting in the top of the seam was three feet in thickness which at the bottom of the slope is reduced to 3 inches. It also thins to the West and is entirely wanting at the Caledonia pit, while it thickens to the east and is some 10 feet thick at Old Bridgeport. The ventilation of the mine is regulated by a furnace 5 feet 6 inches wide, and 3 feet above the bars. The wooden cupola on the surface is contracted to an area of 16 square feet.

EMERY.

The working of this colliery was also early suspended and has not since been resumed. Machinery similar to that at the Re-

serve has been erected. The winding engine has one 24-inch cylinder with a 4 foot stroke. It is geared one to two and has friction drums. Five boilers 33 feet long, and 3 feet in diameter, supply the steam to this engine, the fitting up shop, and to the pump which is a direct-acting steam pump placed at the bottom of a pit chiefly sunk for the column of delivery pipes.

SCHOONER POND.

No coal was mined at this colliery during the year and the workings were allowed to fill with water as at the Emery and Reserve.

GARDINER.

Headways have been driven to the rise 18 chains, and a pit 55 feet deep sunk for ventilating purposes. The pit has been opened out with rooms 18 feet wide, leaving pillars 10 yards thick by 40 yards long, with a view to the subsequent working of the pillars The seam varies in thickness from 3 feet 6 inches to 4 feet 9 inches. It has a strong post roof and a fireclay floor.

The coal from this colliery is shipped from the International pier at Sydney.

INTERNATIONAL.

A new lift has been opened by a dip incline 1320 feet long, the pillars being left 8 yards thick by 20 or 40 yards in length. As is now generally done the pumping is effected by a direct acting steam pump. A new one has been added, which has a 16-inch cylinder and 7-inch plunger, and for which the steam is conducted from the surface.

GLACE BAY.

Mining was principally carried on in the Harbour seam, the Roost Pit on the Hub seam having been early closed. The sinking of the new or Stirling pit has been completed and the Harbour seam struck at the depth of 234 feet. The sinking was delayed by the quantity of water met with, which at times was as much as 8000 gallons per hour. Great advantage was found attending the use of dynamite in the sinking as no time was lost in drying the holes or in making water-tight cartridges. The shots were fired by electricity. The winding engine has a pair of horizontal 11-inch cylinders with a stroke of 3 feet 6 inches, driving direct a 6 foot draw.

The entrance to the harbour has been improved by the widening of the channel to a width of 100 feet.

CALEDONIA.

A few pillars have been removed, a second incline plane fitted up, and upper levels driven from the inclines. On the surface more tenements and mechanic's houses have been erected, the screens covered in and additional boiler power furnished.

The artificial harbour at Port Caledonia has been benefited by being entirely shut off from the waters of Glace Bay Lake, and the flow of the tide prevented.

VICTORIA.

A new lift has been opened by a further sinking of 135 feet which gives to the slope a total length of 750 feet. The coal in this section is absolutely dry, showing how tight the measures naturally are. Some troubles similar to those met with in the Block House suggest similar circumstances, on account of their singularity, and offer a hope that the seam is not faulted but is here merely steeply pitched as the measures are on the northern side of the Blockhouse trough.

The pumping is now effected by direct acting steam pumps, a smaller Cameron throwing the water from the bottom to the second lift, and a larger one stationed there sending it to the surface.

ONTARIO.

A lower lift of workings some 180 feet in depth which was opened a few years ago, but temporarily abandoned has been pumped out and work in it resumed. The shipments from this colliery are made at Port Caledonia.

At the eastern end of the area in which this colliery is, the Schooner Pond colliery extracted some 1500 tons from the Emery, the next underlying seam, from a jib shaped portion that separated the two areas of the last named company.

BLOCK HOUSE.

The workings of late have been chiefly in the pillars though some excavations have been made in the solid coal of the deeper part of the trough. To repair the damage done to the wharf by gales of wind and the drift ice of late winters, but principally by the great gale of August 1873, a new face has been made by the building of a block 24 feet wide on the eastern side, and the addition of 40 feet to the front. The work is of a very

substantial character. The face is built of timbers one foot square backed and bolted to round logs not less than a foot in diameter at the small end.

GOWRIE.

The removal of the pillars has received some attention. A face of work is carried up in the pillar from the highest cross cut to the broken and the remainder of the pillar brought in working back. A new method of working has been adopted in one section of the pit. Rooms 30 feet wide are driven between pillars 18 feet thick. A road is carried up on each side and the centre is stowed with the shale and refuse coal.

Clip pulleys have been adopted in the self-acting inclines by which now all the coal from the rise workings is lowered to the main levels.

The mine water is so corrosive that it has been found economical to replace the cast iron pipes by pump trees of birch, the working barrels being lined with babbit metal. Some progress has been made towards establishing the new winning to the Northwest of the present pits. A railway three-quarters of a mile long has been built and machinery erected. The winding engine has two horizontal 20-inch cylinders with a 3 foot 6 inch stroke. The drums and pulleys are 8 feet in diameter and are for round ropes. There are 4 flash flue boilers, 30 feet long by 3 feet in diameter. The completion of this new winning will probably be made during the current year.

SOUTH HEAD.

It is expected that work will be resumed at this colliery in the Spring and a wharf built for the shipment of the coal.

At Loch Lomond, about six miles from Big Pond, at the head of East Bay, coal has been found. The seam is said to dip at an angle of 20 degrees and to have 18 inches and 2 feet of coal separated by a parting of 3½ feet thick.

Messrs. Ingraham have been taking a few tons of coal from the outcrop of the Indian Cove seam on their area adjoining the Sydney mines.

VICTORIA COUNTY.

In this, the only other county in which coal mining has been prosecuted, the chief operations have been at the New Campbellton, where the pit has been put in order, the slope extended to a depth of 580 feet and new rooms broke off. The tubs and wagons repaired, a new hoisting engine ordered and a locomotive purchased to run the wagons to the wharf at Kelly's Cove.

The continuation of the seam has been further traced toward Cape Dolphin. A new overlaying seam 2 feet thick has been discovered.

The Black Rock colliery on Boularderie has been re-opened and a few tons of coal extracted and sold.

The results of the prospecting in Richmond and other Counties have not been reported.

GOLD MINING.

"What is the cause of the decline in the Gold Mining of Nova Scotia" is a question often asked, for it is only too apparent that year by year the yield of gold is lessening and the number of men engaged in mining reduced. Seven years ago 27,583 ounces were extracted from 30,673 tons of quartz by the labour of 676 men, and last year but 9140 ounces were obtained from 13844 tons of quartz mined by 246 men. An answer is not far to seek but a remedy is not so readily available. Among the causes that have been assigned for the decline are over speculation, share dealing in place of quartz mining, incompetent and expensive management, and lastly dishonesty. These all doubtless did exist and had their influence, and yet the decline continues even now when most of the causes that are presumed to have largely produced it have passed away. Search must consequently be made deeper, and it is feared some allowances must be made for the natural obstacles to be surmounted in the mines themselves, such as the excessive thinness of the paying leads, the disproportionate expense of pumping and an absence of rich finds and large profits to excite further prospecting and continued labour in spite of non-success.

Capital has been already induced to speculate in our mines but on the whole it failed to do so profitably. To turn it again into the same channel will be difficult. It can only be done, now that companies have nearly ceased to interest themselves in our gold mines, by showing that individuals and companies of tributers can do more than merely make wages by working the outcrops of the leads, and to show that experience has been gained, economy learnt, and improved methods of mining and milling introduced since the first attempt was made to bring capital into the business.

Money has been made at gold mining in Nova Scotia and among the mines that have been most successful are the Wellington and Palmerston at Sherbrooke, the Ophir at Renfrew, the Albion at Montegu, the Eldorado at Wine Harbour and the German's mine at Waverley.

Without doubt there are many leads just as rich as any that have been found yet to be discovered, and although wages and the price of materials have risen experience in mining now enables leads to be worked and pay expenses, that before could not be made to do so. So that while the prospects of a return to the activity of 1867 are not immediate, still there is no likehood of an entire cessation of this industry. It is believed that one step in the march of improvement has been taken by the introduction of dynamite as an explosive in the place of black powder. It has been tried at many of the mines, and where fairly tested found to be attended with economy. Mr. Townsend, at Tangier, furnishes the following report on the comparative cost of using the two materials. His results from using dynamite have enabled him to mine with profit a lead that hitherto can hardly be said to have paid expenses. "The Ward shaft on the Dunbrack lead was let to tributers who sank it from a depth of 44 to that of 69 feet, stripping 950 superficial feet of the lead at the rate of 1.58 feet per man per day, at a cost of 87.5 cents a foot for labour, powder and fuse. The same shaft was then continued, using dynamite in place of powder, and 562 feet were stripped at the rate of 3.75 feet per man per day and at a cost of 43 cents a foot. A subsequent stripping of 522 feet from a depth of 77 feet, cost 46 cents a foot and was effected at the rate of 3.5 feet per man per day. From shaft No. 1 on the same lead and from a depth of 40 feet, 746 feet were stripped at the rate of 3 feet a day and at a cost of 52 cents per foot. In making this estimate the cost of much preliminary work was included. Shaft No. 2 was let to tributers who were using black powder at 62.5 cents a foot, but as they found the ground excessively hard, they quickly abandoned the contract. Work was then proceeded with using dynamite and 500 feet stripped from a depth of 40 feet at the rate of 4.5 feet per man per day at a cost of 49 cents. A subsequent stripping of 685 feet, cost 59 cents a foot." This reduction in cost which in the mine alluded to, attended the substitution of dynamite for black powder, if general should enable many mines now merely paying expenses to yield a profit. At Sherbrooke and Waverly a considerable saving is also effected, but no definite statement has been forwarded.

Were single hand drilling and the system of paying by the foot drilled, introduced a further saving might be expected. In the

matter of milling much remains to be done. Some attention has been given to the batteries, but with but one or two exceptions little to the treatment of the tailings which undoubtedly do carry off much gold with the flowered mercury and iron pyrites. The actual loss is not known, for the practice of assaying is not resorted to, but that in many cases it is considerable, cannot be doubted.

The subletting of mines to tributers is still largely practised and while it has advantages when properly conducted, it has evils which become more apparent as it continues. In previous reports reference were made to the character of the work done by tributers, how that often the outcrops of the leads are stripped and made reservoirs for water, and the excavations often but partly packed with debris and but temporarily secured. In these respects the system is undoubtedly bad, but what legal measures to suggest that will remedy the evil without interfering with and crushing out adventurers from prospecting, are not easy to determine. The men who take the mines on tribute are irresponsible, and Arab like, they are forever wandering, trying new places, opening up old mines and again abandoning them.

Perhaps a remedy may be found by modifying the system of leasing, and by making the title of holders more secure, make them more interested in adopting a proper and more permanent mode of working.

DISTRICTS.

STORMONT.

In the spring work was resumed on areas 983 and 196 Block 1, E. D. On the property of the Consolidated Company, Mr. Hattie erected a winding engine and force pump. He also built a shaft house and put the mill in order. On the lead he has tunnelled to the west from the bottom of the shaft, which is 120 feet deep, and stoped overhead, obtaining fair returns for his labour.

Some little prospecting has been done on other areas in the district.

At the Johnston's brook mine a tunnel was started to intersect the lead 85 feet from the surface at a distance of 150 feet, but on driving a dyke was cut and the work was abandoned.

WINE HARBOUR.

The Eldorado Company have suspended operations on the

Plough lead, for on sinking below the 130 feet level, for 20 feet it was found that the lead had pinched to less than two inches in thickness and carried no gold. As the lead also pinched to the West and was barren it was naturally supposed it would not be likely to improve again in depth. It seems as though the paying portion of the lead had filled in a wedge-shaped fissure which was formed by the abutting of the main fracture against a cross-fault of the same age. The thickest and richest part being near the surface, at the junction of the lead with the cross fault.

At the Barrasois, the thick lead was abandoned and work was transferred to a lead 25 feet to the south, on areas 1 and 2, Block Six.

Some work was also performed on the Major Norton lead and prospecting on others, 18, A ; 12, 13 and 24, B ; 15 and 27 D ; 9 and 10 F ; 6, G.; and 1 H.

Twenty-two tons of tailings, worked over at the water mill yielded 5 ounces of gold.

SHERBROOKE.

Mining was very dull in this district until the autumn when work revived and the end of the year saw a return of some of the old interest in its mines.

On the Dewar lead the western claims 620, 621, 622, 623, Block 3, were continuously worked, while to the east the lead seems to have impoverished in depth and work was abandoned in the Try Again, and for a time on the Rochester property. New and more powerful machinery has been erected on the Wellington, the adjoining and underlying lead, and the work of pumping out the water begun. It will be remembered that the workings on the Wellington were carried down to a depth of 500 feet. The greatest depth yet attained in any gold mine in the Province.

New ground has been broken on several areas in the district and some abandoned leads re-opened, but the results nowhere proved very promising and in most cases after a short time the miners turned their attention to new localities.

The tributers who have been working on the Palmerston property have also worked the extension of the South lead on the Dominion. On the same line of leads on areas 748 and 749, Block 3, the returns have been fair and promise steady work for

this year. On the extension of the same belt on areas 750 and 751 on what is probably the Stryker lead mining has also been carried on. Other operations were conducted by Mr. Zwickle on areas 674, &c., and on area 615, Block 5. Mr. West has discontinued to mine on the lead lately worked by him on the Hayden and Derby property.

When work in the mines was dull during the summer, the miners turned over the dump piles and put much of the refuse with some of the surface soil through the mills obtaining sufficient gold to pay for the labour.

HARRIGAN COVE.

Further prospecting in this district has disclosed more leads to the south of the Galena belt. Regular mining has not yet been begun. At Shear's Point some 12 tons taken from the 20-inch lead yielded 5 ounces of gold; a return that it is expected would pay well were a mill conveniently situated for crushing the quartz.

FIFTEEN MILE STREAM.

This district in spite of its disadvantageous position has attracted several parties of prospectors who have laid bare many promising leads. For want of a good crusher little has yet been done in the way of actually testing the value of the quartz extracted, but it is hoped that the winter will enable material to be taken into the district and that in the spring one or both mills will be in working order. A good road over which supplies can be carried is much needed, for the lumberer's roads at present used are practically impassable during wet weather.

The only actual mining has been on the Jackson lead, which is one of the few large leads that yield well. Nearly two feet thick it carries 16 dwt. to the ton. Like the barrel quartz at Waverley, this lead has many rolls, but the rolls instead of dipping slightly or not at all as is generally the case in other places, dip at an angle of 25°. In some other leads of the district the rolls are nearly vertical.

CARIBOU.

Operations were resumed in this district, Mr. Caffery taking on tribute the Hyde property and Mr. Touquoy returning to work his own areas. Mr. Caffery has sunk the pumping shaft on the Burnett or Hyde lead, an additional 30 feet, making it have a

total depth of 124 feet. He has stoped 100 feet east, and 220 feet to the west, to within 10 feet of the bottom. Some distance east of the pumping shaft this lead is thrown 60 feet south, and was opened by four shafts 10, 5, 15 and 35 feet respectively in depth. It varies from 1½ to 8 inches in width, having an average of 4 inches.

A shaft 12 feet in depth has been sunk on the Slate lead. On the so called Reid block, Messrs. Touquoy and Caffery trenched about 50 feet in soil varying from 5 to 10 feet in depth and sank three shafts 15 15, and 25 feet respectively. From the deepest, stopes were driven 8 feet and 10 feet to the east and west. The lode is the same as north No. 1 on Mr. Touquoy's property, but has diminished from 7 to 3 inches in thickness. On the same lead Mr. Touquoy sank three shafts to the depth of 10, 25 and 10 feet respectively and stoped from the middle one 15 feet east and west. On north lode No. 2 which is 8 to 18 inches thick, he sank 18 feet, increasing its depth to 84 feet and stoped 10 and 20 feet to the east and west.

On the Pioneer property about 100 feet of trenches were cut searching for leads. Explorations were also made on the old Cross lead which in spots carried 20 ounces to the ton and on the Flat lead which at one time paid well.

TANGIER.

The chief operations have been on Strawberry Hill, mining on the Leary, South and other adjoining leads having been abandoned. The new lead opened by Mr. Forrest last year on the Strawberry Hill he abandoned to work on the Dunbrack which lies about 200 feet to the south. The same lead is worked by Mr. Townsend and is the same that is spoken of when reference is made to the use of dynamite in the gold mines. Across the river Messrs. Ross and Miller have been working on the supposed extension of the Leary lead. A tunnel has been driven in from the shore which carries off the surface water. The shaft is down 30 feet and the stopes extend 40 feet along the lead which is 2 to 8 inches thick. The prospecting on the parallel leads, one of which is supposed to be the Fields has been suspended. No quartz from these leads has yet been crushed to test their value, and do so it is talked of putting up a mill on the river.

At Mooseland Mr. Irvine has continued to employ some eight men on the property he has under tribute.

OLDHAM.

The Hall lead on the Sterling property was steadily worked. This lead is very small but rich. It differs from ordinary leads in that it does not follow the lines of stratification. But it has a general dip north against the dip of the strata when passing through quartzite, until it strikes a bed of slate which it follows down for a short distance and then again breaks away across the strata. Where this vein is worked to the eastward it does not show at all on the surface. Some little work has been done on the Whitehead, Britannia and Blue leads, and prospecting generally throughout the district. Mr. Donaldson struck a fault at the bottom of his mine at a depth of 120 feet which a cross drift proved to have thrown the lead 18 feet to the north. He is now preparing to continue the sinking and to work the pumps by means of a set off from the main pump-rods. In the upper portions of the mine the stopes extend 500 feet along the lead.

RENFREW.

A small amount of work was done in the Preeper lead and some prospecting on new ground by Mr. McClure but without much success.

WAVERLEY.

On Laidlaw's Hill the tributers have continued to work the barrel quartz. They have two pits about 30 feet deep connected by a tunnel. From the lower one the water is pumped by means of a wire rope driven by a water wheel in the ravine close by. The quartz lies very flat and the workings have been both to the rise and dip of the shaft. A second company of tributers began in September to mine on the adjoining Morton property.

Work on the American Hill was suspended in the spring and Mr. McClure set his men to search for the continuation of the Union lead, which does not show at the surface to the eastward. It was found and has since been paying handsomely. The lead numerous rolls 4 to 8 feet apart dipping at a slight angle to the east. Its usual thickness is 8 inches but in the rolls it thickens to 15 inches.

MONTAGU.

The Albion mine owned by Mr. Lawson and which he has been working for the last five years was closed during the summer, but has been since let to tributers who propose to further stope along

the intersection of the cross lead with the belt lead. The mine has yielded about 10,000 ounces of gold and is said to have been worked most profitably. During late years a plan of the workings that records the value of each parcel of quartz extracted, was kept. It is of interest, for while it shows how irregularly the gold is distributed in the lead, it also points out the extent and character of the so-called "gold streak." The richest portion of the lead at the surface was at the main shaft; in depth it trended to the westward. In the sinking of the main shaft, which reached a total depth of 300 feet, the quartz in the eastern stopes diminished in richness and thickness and ceased to pay the nearer to the shaft the further the sinking progressed. The western stopes also became impoverished in depth and the yield of paying quartz so small in quantity that it became no longer profitable to keep the mine free.

An idea may be formed of the expense of extracting a ton of quartz when it is stated that where the vein thinned it required about 100 square feet of stoping to yield one ton of quartz. Each square foot on the lead being mined on an average at a cost of 52 cents. In such a vein as this a yield of two or even three ounces to the ton is consequently unprofitable.

The mine was worked in a most systematic manner, and in such a way that the scaffolds above the lower stopes were below the next stopes in the series, thus enabling the miners to throw the slate and waste rock down and stow it the more easily on the scaffolds to the saving of much labour. The several shafts that are shown on the sketch plan were formed by leaving spaces unpacked with slate immediately above the centre of each stope.

The mill erected by Mr. Lawson is the best appointed in the Province. Blankets are used and the pyrites collected and specially treated in a revolving barrel. The tailings have been worked over a second time and the pyrites from exposure and a subsequent remilling reduced to $1\frac{1}{2}$ ounces in value.

Symond's property has been let to tributers and they have been working the cross lead on area 1461. One lot of 18 cwt. yielded 19.7 ounces of gold. Tributers have also been working on Messrs. DeWolfe's property, area 1166, mining merely on the surface. Other tributers have done a little work on areas 952 and 1457.

UNIACKE.

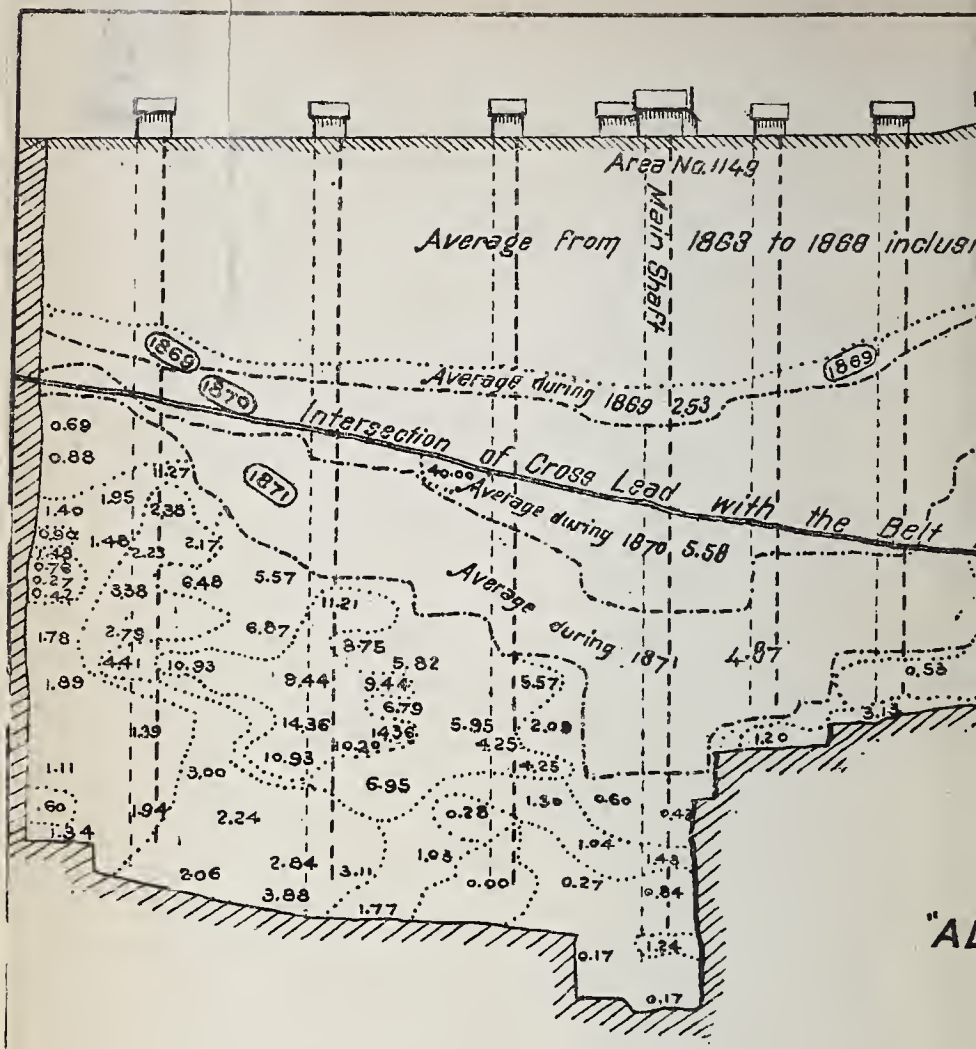
A few men worked in the summer on the McIntosh claims, stripping portions of the leads that had been left from former working down to the water level, a distance of 25 to 30 feet.

GAY'S RIVER.

Mr. McDonald has continued to work area 40, in the conglomerate of the lower carboniferous which immediately overlies the auriferous slates. The streak of pay dirt seems to dip N. N. W. The main slope strikes the lower edge of it at a depth of 140 feet, when the brow of a steeper declivity is reached and the underlying and paying conglomerate thins out. The slope then turns to the N. W. and has been driven 160 feet further between, as it were, nips in the pay dirt, the non-auriferous conglomerate which is 6 to 8 feet thick, coming directly down on to the bed rock. In the adjoining area to the east the edge of the steeper declivity is met with at a depth of 90 feet and from that point the pay streak has been followed to the south, a distance of 40 feet.

Lately the miners have been stripping off the top of the bed rock and crushing the slate with the conglomerate as it has been found that the fine gold works its way into the cracks. From one crevice 2.5 ounces were extracted though this is unusual as generally the gold is equally disseminated.

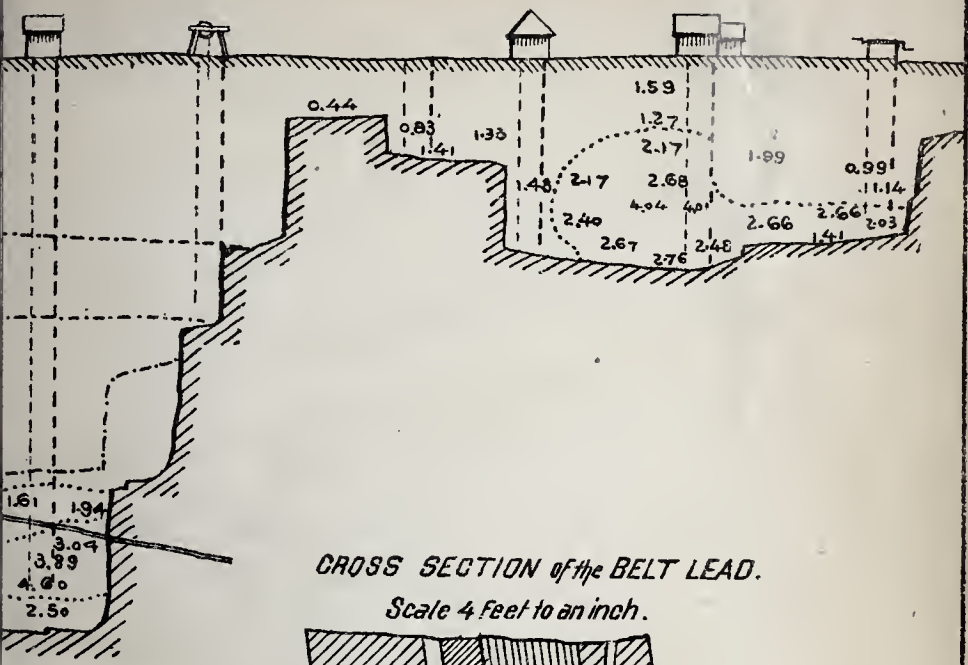
In Yarmouth County, the mine at the Cream Pot, Cranberry Head, has been re-opened, the shafts and buildings put in repair, and the mill in order. The west shaft has been sunk a further distance of 5 feet or to a total depth of 190 feet. The east shaft has also been deepened some 30 feet and has now a total depth of 145 feet. The lead has only been stoped out some 50 feet from the surface between the shafts which are 50 feet apart. There are other two shafts on the lead which were on a former occasion sunk to depths of 40 and 90 feet respectively. The lead does not follow the lines of stratification, but intersects the soft micaceous slates at a slight angle. It occurs in rolls and varies from 2 to 16 inches in thickness. A roll of richer quartz is said to crop out on the shore at low water mark, which it is expected the shaft will strike at a depth of 240 feet.



NOTE; Figures denote Average Yield (in Oz.) per Ton.

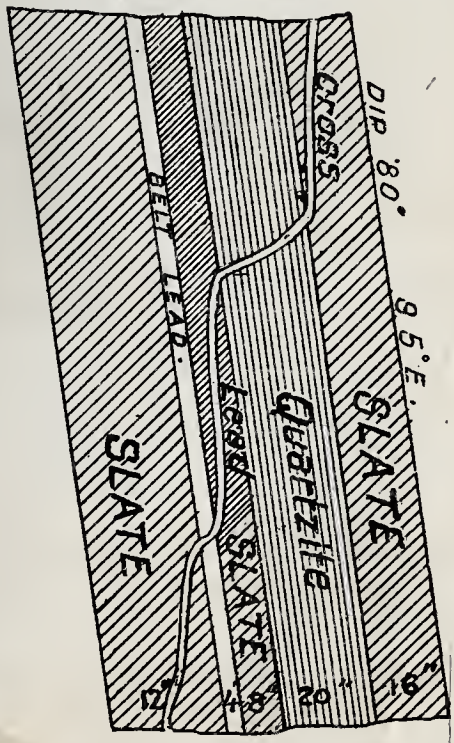
Strike of Lead N 85° E. by Magnet.
Lead at East end 1½ inches.
" " West " 6½ "

Heliotype



CROSS SECTION of the BELT LEAD.

Scale 4 Feet to an inch.



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1149, 1150, 1151, 1152.

an Inch.

Drawn by Charles H. Carrian, Mines Office Halifax, N.S.

IRON MINING.

It has been deemed expedient for the general prosperity of the country that the Government should offer inducements for the development of the coal trade by granting subsidies and percentages on coal royalties to the builders of railways opening up certain sections of the country.

While acknowledging the value to the Province given by the encouragement of railways built to facilitate the export of coal, it should not be forgotten that but a small portion of the true value of this raw product is thus rendered to the country that produces it. Coal is the great motive power of this age and a country possessing it has advantages for manufacturing and arts requiring a large consumption of fuel that should enable it to successfully compete with others not so well favoured. Now the manufacture of iron is essentially one of these industries and any special inducements that can be made to further its development in Nova Scotia should be favourably regarded and especially by coal operators, inasmuch as on an average in England the manufacture of one ton of iron causes the consumption of six tons of coal, of which quantity one-half is consumed in the production of the pig metal from the ore. Nor is the value of such an industry to the country alone to be computed from its consumption of coal. The money expended in the mining of the coal and iron ore is many times turned over by the producers and carriers of supplies, then there are profits derivable from the subsequent handling of the pig metal in the founderies and factories for the working of it up into objects of utility and ornament, every process entailing a further consumption of fuel.

If Government were to aid this industry, either by the direct granting of subsidies per ton of iron smelted, or by the granting of a drawback on the royalty of the coal consumed at iron works, the resources of the Province would be directly developed in a greater degree than they would by the encouragement of facilities for transportation.

The establishment of such an industry in Cape Breton would especially benefit the general business of that Island and would

make a market for some of the small coal now all but valueless. Most of the Cape Breton coals are coking coals and from among so many some may be found to yield strong and suitable coke. And as experience has taught, and as the relative consumption of iron ore and coal would suggest, it is better to take the ore to the fuel than the fuel to the ore, we must hope some day to see iron works established on the Bras d'Or, or at Sydney, or at Louisburg, some centre where ores from different localities may be brought and mixed at the furnaces. Although at the present time the iron trade of this seaboard is dull, and the immediate prospects of the mines and furnaces in the United States is anything but encouraging, still it is a business that must shortly revive and eventually pay in this country, which possesses the requisite natural advantages, cheap transit, abundance of coal, iron ore and limestone.

During the year that has passed an unusual degree of activity prevailed among prospectors searching for beds of iron ore and discoveries have been made in several sections of the country that promise to be of future value.

Professor How in his "Mineralogy of Nova Scotia", classifies the information gained in 1868, respecting the position and extent of the Iron deposits of the country. Since then new discoveries and further explorations have been made, and the extent of many deposits shown to be considerable.

In Cape Breton at the Indian Reserve, Whycocomagh, some nine deposits have been exposed as interbedded with the country slates, and proved to extend a few hundreds of yards. They extend much further, but the surface being heavily covered with soil and trees has made the work of exploring tedious and expensive. One bed of magnetic ore, nine feet thick yields, it is reported, 46 per cent. of metallic iron, another hematite bed six feet thick, carries 56 per cent. of iron. At Big Pond on the East Bay of the Bras d'Or lake, a bed of hematite some nine feet thick has been lately opened and proved to extend for at least half a mile. An analysis shows it to contain 61 per cent. of iron. Very promising looking boulders of hematite ore have been found at Little Lorraine near Louisburg but no explorations have, it is understood, yet been made. Clay ironstone is known to exist in the coal measures of the Sydney field near the town of Sydney and at Schooner Pond in considerable quantity. The largest beds of this ore that have yet

been noticed are found near Mabou and by analysis contain 42 per cent. of iron. An iron ore containing much manganese, is reported to exist near Loch Lomond, Cape Breton.

In Nova Scotia proper boulders of ore have been found in several localities where explorations have been conducted on a small scale. Along the course of the North mountain, Digby Neck, and at Middleton, a magnetic ore of very superior quality has been found in many places, but nowhere has it yet been reported to exist in quantities.

At Arisaig close to the pier a bed of hematite three feet thick has been exposed. Its composition is unknown.

In the Goshen Hills, of Hants County, a deposit of iron ore, identical in appearance to that of Londonderry, has been opened by Mr. Browne, and proved in one place to be forty feet wide. An adit has been begun that will intercept the lode at 85 feet from the surface. The composition of a sample of this ore is given in the table of analyses. On the East and West extensions of the Londonderry beds at North River and towards Five Islands veins of specular and magnetic ores are reported to exist.

On the farm of S. Johnstone, Newton Mills, Stewiack, iron ore is said to have been found. In other localities in Colchester County the existance of iron ores has been for a long time known, as that limonite, near Brookfield, and goethite at Old Barns.

The Springville iron ores in Pictou County have been further prospected by Mr. Edwin Gilpin, for the holders of the licenses, and much additional information obtained. He also made a preliminary survey for a railway to connect these so called East River areas with the Provincial railroad below Hopewell, and found that a line of eleven miles would open up the field of which area No. 5 may be considered the centre.

On area, No. 5, a license to work, the vein of limonite has been traced along the east bank of the East river, two and a half miles across the area, and is supposed to extend up the river through area No. 13 for seven miles. Where trial pits have been sunk and the vein reached, its thickness has been found to vary from 8 to 15 feet. A vein of hematite in the Silurian slates, apparently parallel to the limonite bed, has been proved at the southern extremity of the area to be 15 inches thick, increasing in thickness going north. On area No. 12, a bed of red hematite 7 feet wide, was traced about one mile from the centre of the

northwest side line obliquely across the area to the property of J. Kennedy. Overlying it, is a band 12 feet wide and underlying it another 8 feet wide.—Area No. 6. The vein of specular ore already proved on the eastern side of this area was further examined by trial pits, and the width of the main vein found to vary from 6 to 20 feet while the side veins in places thickened to 2 feet. The continuation of the Weaver bed seems to extend all the way across area 22, giving to the deposit of specular ore a total length of some two miles.

On the area No. 102, a five foot vein of hematite was traced for a mile and a half along the bank of a brook that empties into the East river at the upper settlement. The continuation of this vein is also supposed to be found on area No. 21. Its general course is north and south. On area No. 7, a new bed of hematite 4 feet wide has been discovered. It has the same course N. 10 E. as the Blanchard vein which has been further proved. On area No. 8, when exploring for the Webster ore a vein of good ore 10 inches thick was struck ten feet down, which did not show at the surface. The Webster vein extend nearly three miles. At Sutherland's River the spathic ore has been further explored and indications of its existence extends for over half a mile. The results of these explorations puts beyond doubt the great extent of the Springville deposits, and the value of some of the ores is shown in the appended table of analyses. Much money has already been expended in developing the district, and strong hopes are now entertained that a company with sufficient working capital will shortly be incorporated to establish extensive iron works in the neighborhood.

The Annapolis Iron Mines at Clementsport, have passed into the hands of the New York and Nova Scotia Iron and Coal Mining and Manufacturing Company, who have employed some eight men only during the year mining ore. The furnace is out of blast undergoing repair. It is contemplated establishing a foundry and forge in connection with these works.

The Acadia Iron mines at Londonderry have also changed hands, and become the property of the Steel Company of Canada, (Limited), having a capital of £500,000 sterling. According to the prospectus, the property consists of 55 square miles of freehold lands together with the mines there under and the works and

buildings thereon. It was purchased for £82,000 in cash and £120,000 worth of fully paid up founder's shares. During the year but 1069 tons were mined, the chief operations being on new ground, cutting, exploring trenches, and driving adits.

A new level is being driven at Martin's Brook which will cut the main deposit 70 feet below No. 6 level of the present workings. It will be about 1700 feet long before striking the ore and it may possible cut a new deposit which is suspected to exist from the occurrence of boulders of ore in the soil some distance from the present workings. A second series of deposits was proved to exist 500 yards to the north at the foot of the Sugar Loaf hill. Some exploring was also done from the ravines on Pine and Cumberland brooks.

On the Folly mountains numerous trenches were cut across the strike of the ore deposits, and the thickness proved in places to be 30 and 40, and even 120 feet. Adits here also have been started in the ravines to tap the surface water of the lode.

The blast furnace, burning charcoal, was kept running during the year and smelted 1462 tons of metal from 3097 tons of ore. The steel works were closed and the foundry was alone utilized. Some 281 tons of ore were shipped to England as a sample. On an average during the last six months 218 were employed.

The ore from these deposits is considered more than usually free from sulphur and phosphorus and especially suitable for steel making. For this purpose, the company which now possesses the property was formed, and while they propose to work the main bulk of the ore by Siemens' Direct Process, for the production of iron and steel, they also intend to erect two large blast furnaces to use coke and produce foundry pig. Three of Siemens' furnaces are already built and they will probably be lighted in April. As their construction and principle of operation is so different from the familiar blast furnace, a short general description will doubtless be of interest.

Each furnace may be said to consist of three distinct parts, the gas producer, the regenerator, and the furnace proper. The gas producer is a rectangular fire-brick chamber, 6 feet by 12 feet, by 10 feet high, with one end inclined at an angle of about 45° to a grate, on which the fuel falls in a thick bed from a hopper on the top of the incline. Air is admitted at the grate, and on burning its oxygen unites with the carbon of the fuel and forms carbonic

acid gas, which rises slowly through the ignited mass, taking up an additional equivalent of carbon and thus forming carbonic oxide. The heat thus produced distils off carburetted hydrogen and other gases, and vapours from the fuel as it descends gradually toward the grate and these with the carbonic oxide, the inert nitrogen of the air, and any unreduced carbonic acid are finally led off by the gas flue to the regenerator. The ashes and clinkers from the grate are removed at intervals of one or two days. A pipe to the ash pit supplies a little water which is decomposed as it evaporates and comes in contact with the incandescent fuel, thus forming hydrogen and carbonic oxide which serve to enrich the gas. A sliding damper enables any one of the gas producers—of which there are six—to be at any time shut off from the main gas flue.

To prevent a combustion of the gas in the flues by the admission of fresh air through the crevices in the brick work a slight outward pressure is maintained. This is effected by carrying up the hot gas through a short brick stack to a horizontal sheet-iron tube, "the elevated cooling tube," from which it passes down directly to the underground brick flue leading to the regenerators, forming a syphon having both limbs equal, but one filled with a heavier gaseous fluid than the other. For the gas rising from the producer at a temperature of 1000° Fahr., is cooled as it passes along the tube and consequently the descending column is denser and heavier and overbalances the ascending column.

The regenerators are worked with two pairs to each furnace. Each regenerator is a chamber packed with fire brick, separated so as to allow of the free passage of air or gas between them. The gas ascends through one chamber whilst air ascends through the neighboring chamber and both are conducted by passages to the furnace, where mingling, they burn, producing the heat due to their chemical action. Then passing through the furnace, they, (the combined gases), by similar passages into the remaining pair of regenerators from above downwards they heat them intensely, especially the upper part and then travel on in their cooled state to the chimney. Every twenty minutes the course of the air and gas currents is reversed by means of valves. The chambers heated by the waste gases, heat on the reversal of the current the entering gas and air and are thus alternately heated and cooled. The heat evolved by the combining gases is considered to be about

4000° and the waste heat after passing through the regenerator has had its temperature lowered to 300° Fahr. By the alternate reversing of the current course the temperature is accelerated until the furnace acquires the required heat. Were no cold materials put in to abstract the heat, the temperature would continue to increase as long as the furnace holds together and the supply of air and gas is continued.

Two of the furnaces are rotators specially modelled by Mr. Siemens. They are 9 feet in diameter and 8 feet long and are revolved by machinery. The third is a melting furnace.

The advantages of this process for puddling are that the heat can be raised to an almost unlimited degree, that the flame can be made at will, oxidising, neutral, or reducing, without interfering with the temperature, that the in-draughts of air and cutting flames are avoided and that the gas fuel is free from ashes, dust and other impurities.

LEAD.

A search for ores of lead is occasionally made and indications of extensive deposits have been in several localities discovered. At Lower Gay's River, six miles from Shubenacadie railway station, the prospecting, renewed last autumn, has been continued and an idea may now be formed of the extent of that deposit. Discovered some fifty years ago by the settlers who then as now quarried and burnt the limestone for their own use, it has been several times examined and excavations made with the hope of finding a vein or massed deposit of ore. But from the knowledge now acquired, there is little likelihood of such hopes being realized. The deposit appears to be peculiar, in that it is neither in veins nor pockets but the galena is alone found in small segregated crystals generally diffused throughout the limestone beds. The galena is in spots aggregated about small cavities, but no where in quantity or otherwise than in small grains. These beds are of small thickness, of a total thickness undetermined, but over twenty feet. They lie horizontal on the irregular surface of the unconformable Silurian rocks and judging by the fossils found in the extension of the beds further west, are lower carboniferous and contemporaneous deposits, with the auriferous conglomerate worked for gold five miles to the eastward.

It would appear that subsequent to the final metamorphism of the fossiliferous into the present compact limestone the galena was deposited and probably from the percolating waters that produced the metamorphism. Wherever opened the limestone seems equally charged with galena, the upper equally with the lower beds and in places hundreds of feet apart. Should it be proposed to work this deposit, no hesitation on the score of quantity of ore, such as it is, need be entertained. The proved area that can be worked by simple quarrying is ample to warrant the erection of extensive works if only a process can be found to make the small percentage pay. Hand specimens may be found to yield 17 per cent. but the rock requires picking to give an average of three per cent. Analyses of the ore give 11½ ounces of silver to the ton of pig lead.

The grains of galena are so fine and intimately blended with the limestone that trituration will be necessary for separation. This can only be done at considerable expense and at a proportionately large loss of ore. It is not likely that any further steps will be taken until some practical test has been made at some existing lead works.

Disseminated crystals of galena are found in the limestone near Sydney and Arichat, at the latter place in small pockets, but no where in any appreciable quantities. Boulders of lead ore have been found near Pembrook in Colchester County, but not in situ. A narrow vein containing galena has been found near Port Hood, C. B., which requires further exploration before its value can be estimated.

FREESTONE.

New Freestone quarries were opened at Wallace and Pictou, but the total quantity exported was less than that shipped last year. From Wallace Mr. Battye sent 1850 tons of building stone to the United States and 2763 tons of second class to Prince Edward Island. Fifty five men were employed at his quarry and works. He has improved his shipping facilities by building a new wharf and purchasing the steam tug Lion to tow vessels in and out of port. He has opened a new quarry and put up a new hoisting engine. Of the other quarries no information has been obtained. The total shipments from

	Tons.	Value.
Wallace	6863	$17.113
Pugwash	308	2.050
Pictou	188	1.448
Merigomish	150	1.500
Tatamagouche	25	100
Windsor	130	10.000
	$7664	$23211

Most of the grindstones made in the Province are quarried by A. Seamen & Co., at the Lower Cove near the Joggins. A few at Pugwash and Tatamagouche.

Tatamagouche, 13 pieces	$ 126
750 tons Lower Cove Stone at $16	12000
350 tons Shore Cove Stone at $12	4200
Scythe Stones 194 gross	776

LIMESTONE.

Pugwash is the only place reported to have shipped limestone to the amount of 448 tons. Many small quarries exist throughout the county, which supply limestone to the kilns. Lately kilns have been built to burn the marble of George's river and the Marble Mountain of Cape Breton, and an excellent quality of lime is produced.

BARYTES.

There is quite a demand in the United States for barytes of good quality to be used as an adulterant. At many localities this mineral is found, as at Port Hood, Stewiacke, Antigonish and River John at which latter place a bed of 4 feet wide is reported to crop out in several places. It is only mined however at Five Islands, from whence 208 tons were exported.

PLASTER.

New quarries of this material have been opened on the Bras d'Or, Cape Breton, and preparations are now being made to ship

largely during the coming season. The shipments in 1874 were from

Windsor	63,370	
Hantsport	500	
Chevirie	23,095	
Walton	1,640	
Maitland	6,775	
Halifax	330	
Parrsborough	1,320	
Antigonish	6,50	
Baddeck (Bras D'Or)	6,560	
	104,240	$104,240

SALT.

In several places in the Province, and generally, if not invariably, in the lower carboniferous measures, salt springs are known. Attempts to manufacture salt from the brine of the springs near Antigonish and Spring Hill have been made, but hitherto neither very extensively nor profitably. A second attempt is now contemplated at Spring Hill, where the circumstances have been of late improved, by the opening of the neighbouring coal mines and the completion of the railway, giving cheap fuel and transit.

The strength of the brine from this spring usually records 30° to 35° on the salometer, or equal to a yield of one bushel of salt from 72 to 82 gallons of brine, the variation in the density being caused by the infiltration of surface water which increases in quantity during wet weather, and decreases during dry. At Syracuse, New York, the brine at the surface only registered 15° to 25°, but on going down a depth of 400 feet its strength rose to over 65°. At Goderich and Seaforth, Ontario, rock salt was struck at a depth of 1050 feet.

It is estimated that with the cheap fuel to be got at Spring Hill a ton of salt should be made for $1.50; now as the price at Halifax is about $7.00, there should be left after paying freight and interest a handsome profit.

The Nova Scotia Salt Works Company made a small quantity of salt at their works situated on the outskirts of the village of Antigonish. They have all the necessary plant to do a large business, but the wells are at present out of order. In 1873 a new bore hole was sunk to a depth of 600 feet when it caved in and was abandoned. The first well was then bored deeper

and a plentiful supply of brine was struck, which indicated 35° by the salometer. After pumping for some time from this well boiling was commenced but it was soon discontinued on account of surface water mixing with the brine. It is to be hoped that the hole will be properly tubed and the surface water kept back, for the business of salt making might be made a profitable one, since something like 50,000 tons are annually required in the Maritime Provinces.

PETROLEUM.

Small quantities of petroleum have been reported to show in several localities. The gypsum of Hants County in the neighborhood of Cheverie contains portions strongly impregnated with it.

At Lake Ainslie, Cape Breton, the quantity showing on the surface of the water is so considerable as to have induced explorations. No search is actually going on now, but the owners of the property have not lost faith in the ultimate success of their undertaking. Two bore holes were put down. The first gave indications of oil, but was lost at the depth of 650 feet by the breaking of the rods, which could not be recovered. The second hole was put down to a depth of over 900 feet and gave better promise of oil, yielding it is said nearly 100 gallons, on the bore hole standing for several days. Further work was prevented by the want of funds. Altogether some $20,000 were expended.

TABLE OF FATAL ACCIDENTS—1874.

No.	Date.	Name.	Age.	Mine.	Cause.
1	March 17 . .	Hector Cummins	13	Vale	Runaway rake in Slope
2	May 28 . . .	Martin Foley	18	Intercolonial	" " "
3	August 17 . .	John Potts	38	Albion	Rope breaking in shaft.
		W. C. Jackson	36	"	" " "
4	" 20 .	Joseph Thomas	43	Londonderry (Iron) . .	Explosion of powder
5	" 28 . .	Michael Cameron	30	Victoria	Fall of coal
6	" 29 .	William Stewart	23	Nova Scotia	Fall of coal
7	December 5 .	Charles Lockhart	36	Scotia	Fall of coal

ACCIDENTS.

While the late condition of the coal trade is not a matter of congratulation, it is a source of some satisfaction when treating of that subject, to have fewer fatal accidents than usual to report. Not only was the number less than usual, but the proportion to the business effected was also reduced.

	1872.	1873.	1874.
Produce in Tons - - - - - -	880,950	1,051,467	872,720
Persons employed - - - - -	3,522	4,362	4,282
Fatal Accidents - - - - - - -	13	13	6
Lives lost - - - - - - - - - -	13	73	7
Averages :			
Persons empl'd per accident	271	315	712
" " " life lost	271	59	611
Tons raised per accident - -	67,765	80,882	145,453
" " " life lost - -	67,765	14,403	124,674

In Great Britain on the average in 1873 there was at all the mines under the Coal Mines Act, one fatal accident among every 526 persons employed in and about the mines, and one death by accident amongst every 479 persons ; also 146,867 tons of mineral were got for each fatal accident, and 133,677 tons for each death by accident." Thus it appears that the death rate in Nova Scotia was nearly as low as that in Great Britain, and shows what is hoped is the beginning of a decided improvement in the discipline of our mines.

Few as the accidents were they have left five widows and twenty one orphans, with but one or two exceptions wholly unprovided for and to the care of charitable friends and relatives. As yet no actual steps have been taken to form an accident fund but the subject is not entirely forgotten. In Pictou County the colliers regard it favourably and some have expressed a hope that when times are again brisk, the project will be revived.

CAUSES OF ACCIDENTS AND LIVES LOST.

Falls of coal, 3; Explosion of powder, 1; Falls in shaft, 2; Crushed in slopes, 2—Total, 8.

Falls of Coal.—This most fruitful source of accident occasione three deaths, and as is often the case such was brought about b the recklessness or temporary carelessness of the persons wh suffered or their immediate associates.

Accident No. 5 —In the bord in which M. Cameron worked two shots were put in, on the day of the accident, and fired, bu the coal did not come away freely so that that shaken had to be pulle down with the pick. When Cameron had taken off all that h thought was loose he stood with his back against the face. Ther it was that a block of coal some 7 feet long by 2 feet deep becam detached, and, in falling, struck Cameron on the head and back His injury was at first supposed to be slight, but he being a delicat man was so affected that he died within the week.

On the following day three men were removing pillars in th Nova Scotia pit and were working where, by the wasting away o the fireclay parting, a block of coal was left unsupported. T bring it down it was thought safer to put in a shot than to us wedges. A hole for this purpose was bored, and in the meantim some of the loose coal beneath it was removed. The workmen di not consider it safe to do so, but decided to risk it. While so occu pied the block came away toppling over one man and falling on th back of Stewart, instantly killed him.

No. 7. Charles Lockhart began on the morning of Decembe 5th, to continue a holing that had been left unfinished the evening before. The holing was 20 inches deep and 9 feet in length. He had barely resumed work in the middle of the bord when a part of the fall came away and crushed him.

In reporting this accident it was mentioned that no warning was given, and that a peculiar slip in the coal occasioned the fall. It is continually the case, that a peculiar slip, an unusual lype or an unexpected fracture are reported to occasion falls that produce such accidents. It is true they may be rarely seen in individual pits but yet they are continually occurring in mines, and are noticed year after year as a source of accident. Such accidents can be guarded against by the use of spraggs in the holing, and their use should be insisted on by overmen. Five other serious though not fatal accidents were reported as due to falls of coal and stone.

Accidents in Slopes.—Two fatal accidents are reported to have occurred to lads in slopes. No. 1 occurred at the Vale Colliery, and was either the result of bad workmanship or from the use of inferior iron in a bolt that connected the shackle on the hoisting rope to the draw-bar of the tub. For on the 17th of March, when a trip had started up the slope and was about 36 feet from the bottom, the bolt broke, the tubs descended and the lad Cummin's who happened to be standing on the track at the time, was killed. It is reported that he was several times cautioned against standing on the track when the tubs were being lifted.

No. 2. occurred during the night shift at the Drummond Colliery. It appears that either the three leading tubs of a rake that was sent away from the bank head of slope No. 4, became accidentally detached, which, by the way, on examination did not seem possible, or that they were sent away uncoupled. At any rate they ran down the slope with great velocity, and leaving the rails at the upper landing, struck Foley who was sitting at the low side corner. He was evidently asleep at the time, for his companions who were within a few yards of him, called to him to look out, fearing that something was wrong on account of the unusual noise, but he took no notice of their cries.

Accidents in Shafts.—A most distressing accident occurred at the Albion Mines. On the afternoon of August 15th, W. C Jackson, the pumping-engine tender at the Foord Pit, found a joint of the column of pipes required attention, and with John Potts, the changeman, prepared to go down the shaft. Together they stepped into an iron bucket suspended at the shaft mouth by a three inch iron wire rope, which at the instant their weight came on it, parted, and precipitated them down the shaft.

The rope used was considered unnecessarily strong for the purpose. It had been on but 16 months, and as it had seen little service and had neither a broken wire nor a drawn strand, it was considered good for another year's use. Everytime it was required it passed through the hands of men who wound it away on the drum of the engine. It had been used but four days previous to the accident for a similar purpose, and when coiled away, no kink, no sign of wear nor corrosion was noticed. It was only used about once a week, by the men attending the pumps and changing

the buckets, and had not been subjected to a weight greater than that of the iron bucket and the two men. It was rove on the day of the accident in perfect confidence of its strength, and yet it parted with a weight but one-thirtieth of its breaking strain. An examination of the break showed but one wire with a bright fracture. All the rest of the 36 wires in the rope were either rusted through or showed a short and blackened face of fracture, so that the bucket previous to the entrance of the men must have been suspended by one wire and the hempen core.

The body of Jackson fell 600 feet into a tank of water at the top of the first lift of pumps, two-thirds of the way down the shaft. Potts was caught together with the bucket by the first set of buntons, 30 feet down, and lay there for some minutes, while men hastened for a rope to go to his assistance. But they returned too late, for the poor man in his struggles slipped off and carried the bucket with him. His body was heard to bound from side to side of the shaft as it fell to a depth of 450 feet, where it lodged, completely denuded of clothing.

At the inquest the facts stated above were brought out and the conclusion arrived at by the jury respecting the cause of the accident appears most credible. On the rope at or near the point of rupture untarred marline was wound as a 'token' to the engine tender of the position of the men in the shaft. Underneath this token the corrosion is supposed to have occurred. Every time the rope was used, the token would get wet and being untarred would allow the rope underneath to retain moisture, and cause it to dry slowly when wound away on the engine draw. This alternate wetting and slow drying underneath the marline, would allow the wires to rust away unnoticed. Had the corrosion occurred at any other spot it could hardly have escaped the observation of the men who twice handled it each time it was required. There were three other tokens on the same rope which being higher up, were seldom exposed to the same wetting and drying, as the lower one, or the circumstances may not have been quite similiar. The lower one may have become from some cause slightly slack, or the upper ones may have been put on where the rope was better protected by a coating of tar. Be that as it may, the engineer was unable to see any difference in the appearance of the rope where the upper tokens had been. The jury, however, thought there was sufficient evidence to convince them that the token was

the cause of the corrosion, and they therefore recommended that such tokens be in future occasionally renewed.

The rope previously used had been on for four years but as the socket on the end of the rope had required on several occasions to be replaced and the end consequently to be cut off, the tokens at each renewal had to be moved.

A wonderful escape from a fall down a shaft occurred at the Sydney Mines. A master sinker, John Brown, was coming up the shaft in course of sinking at the new winning, and forgetful of the brattice, his light having gone out, he thoughtlessly allowed the edge of the tub in which he was standing to catch against the end, 74 feet from the bottom. He was in consequence thrown out and fell, with nothing to break his fall, the 74 feet. Wonderful to narrate he not only lived but escaped with only a severe shaking and sprained ankles.

One other accident in a shaft was reported where a man at the International put his arm through the cage while in motion and had it broken.

Explosions of Gas.—Six explosions of gas were reported, some of which produced but slight injuries and none fatal.

At the Foord Pit of the Albion Mines a shiftman went into a head where he had no business to go, and opening his clanny lamp fired the gas which he had been told lay there. He was slightly burnt on the hands and face. Subsequently he was taken before the magistrates and fined. At Lingan, on July 2nd, James Matheson, on returning to his work of building a dam, fired with his naked light some gas that he was told to try for with his safety lamp. He was slightly burnt and knowing he had broken the rules left the colliery.

At Sydney mines a heading was being driven in June by three shiftmen. On the 4th inst., the shift that should have remained until 10 p. m., came out at 7 o'clock. The next shift went down early and without waiting to see the deputy walked into the face with their naked lights and fired the gas. The two men were sufficiently punished it was thought by being somewhat severely burnt about the face and hands and were not in consequence taken before the magistrate. It was known that some gas accumulated when the heading remained idle for any length of time and the

deputy was specially prepared to warn the men that they would and some gas to brush out on that occasion.

At the Acadia in July a man in the north level of the new drift hung his lamp high close to a hole he was about to stem. After a short time some gas, which had not been previously noticed to collect there, fired at his lamp and ignited the powder, which burnt one man severely and another slightly. Safety lamps were in consequence used while driving the continuation of the levels.

At the Cage Pit of the Albion Mines, two men were slightly burnt in December from gas that had accumulated in the lodgment. Gas had never been known before to gather there though the place had been for some time boarded up to retain the exhaust steam from the force pump. Arrangements have since been made to ventilate the lodgment and condense the exhaust steam in the suction pipe of the pump.

Explosion of Powder.—One fatal accident from this cause was reported—No. 4. It occurred in a level of the Acadia Iron Mines at Londonderry. The deceased Jos. Thomas prepared two shots. The fuse of one he lighted and on its exploding he returned to the face of the level intending to fire the second. Just as he did so it exploded and fatally injured him. It is supposed the fuse of the second caught fire from the explosion of the first. The practice of preparing two shots and only firing one at a time is most reprehensible and should never be allowed. Two slight accidents were reported to have occurred from loose powder falling on the pavement and being ignited by sparks from the lamps. A more serious one was produced by loose powder on the floor of a cabin igniting a cartridge which in turn fired a 5 lbs. tin of powder.

Miscellaneous.—Several accidents were reported as having produced serious though not fatal injuries. Among them one occurred at New Cambellton where two lads while scuffling in the engine house knocked against the driver who fell, and in falling got his arm crushed between the cogs of the engine then in motion. This accident happened before the Mines Regulate Chapter came in force. At Sydney a water blast occurred at the time when a miner was passing a cross cut and he was struck by the mud and water and severely bruised by some stone which simultaneously fell from the roof.

TABLES.—The tables showing the average quantity of coal cut per day, the yield per man, the percentage of sales to produce, &c., are well worthy of examination and comparison with those of last year. The percentage of colliery consumption to the produce as a whole is high. In some cases it gives an idea of the cost of mining, and the comparative cheapness of working new winnings with more modern machinery to the older establishments. A comparison of the total days' labour with the produce is also suggestive of the difference in the expense of working the several seams. These tables also show that collieries producing much below their capacity are worked at a higher rate per ton. The method of striking the averages may not in every case be the same, but the variation can by no means account for the noticeable differences at various collieries.

The extract from the last Custom House report, just issued, shows that the Dominion of Canada imports from the United States, more than double the quantity of coal than is exported to that country and that the value of the imports is nearly three times that of the exports.

I have the honour to be,

Sir,

Your obedient servant,

HENRY S. POOLE.

The Hon. ROBERT ROBERTSON,

Commissioner of Public Works and Mines.

LIST OF COAL LEASES IN THE PROVINCE.

No.	Lessee.	Colliery.	Area Square Miles.		Agent and *Manager*.
		ANTIGONISH COUNTY.			
1	McKinnon et al		3	Not working.	
		CUMBERLAND COUNTY.			
13,14,15	Black, C. H. M		3	"	
21	Blight & Smith		1	working.	
12	Cumberland Coal Mining Company		4	not working.	
	General Mining Association		4	"	
22	Grant, Alpin		1	"	
	Joggins Coal Mining Company		2	"	Alex. Barnhill.
	Joggins Coal Mining Association	Joggins	2	working.	*Robert Redpath.*
20	Kirby, Lewis R		1	not working.	
18,19	Livesey John		2	"	
11	Lawrence Company		1	"	
5	Lawson Company	Maccan	1	"	
1,2,3,4	New York and Acadia Company	Scotia	4	working.	
16	Seaman Gilbert		1	"	William Bennett.
6,8,7	Spring Hill Mining Company	Spring Hill	3	"	
17	Spring Hill & Parrsboro C. & R. Co.		3	not working.	*William Hall.*
9	Victoria Coal Mining Company		2	"	*J. Anderson.*
			35		
		PICTOU COUNTY.			
1	Acadia Coal Company	Fraser	1	"	

LIST OF COAL LEASES IN THE PROVINCE. (*Continued.*)

3	Acadia Coal Company	Acadia	1	working.	Jesse Hoyt,
19,21,22	" " "		4	not working.	S. Cunard & Co.
	Halifax Company, [Limited.]	Albion	4	working.	*James Hudson.*
11	Haliburton, R. G.		1	not working.	
13,14	Intercolonial Company		2	"	James Simpson.
12	" "	Drummond	1	working.	
6	Kirby, Lewis R.		1	not working.	
15	Merigomish Company		1	"	
10	Montreal and Pictou Company		1	"	J. B. Moore.
23	Allan, Sir Hugh, Kt.	Vale	3	working.	*John Greener.*
25	Nova Scotia Company	Black Diamond	4	"	W. W. White.
20	Price, D. E. et al.		2	not working.	
24	Richey, M. H.		1	"	
			27		
		CAPE BRETON COUNTY.		working.	Blowers Archibald.
2	Archibald, Thomas D.	Gowrie	1	"	*Charles Archibald.*
3	Archibald, Thomas D.	"	1	not working.	
25	Cape Breton Co.	Balmoral	1	working.	*W. Macqueen.*
5,28	Block House Mining Company	Blockhouse	2	not working.	
29	" " (*sea area*)		1	"	
72	Brookman, Samuel		1	"	
76,77	Brookman, S. et al.		2		
15	Caledonia C. & R. Company	Caledonia	1	working.	David McKeen.
31	" (*sea area*)		1	not working.	
30	Campbell, Alexander		1	"	

LIST OF COAL LEASES IN THE PROVINCE. (*Continued.*)

70	Cape Breton Company, [Limited.]	.....	1	not working.	
46	Collins, P.	.....	1	"	
66	Gardiner Coal Mining Company	Gardiner	2	working.	Wm. Routledge,
	General Mining Association	Bridgeport	2	not working.	Cunard & Morrow.
	" " "	Sydney	5	working.	John Rutherford.
	" " "	"	12	not working.	*Richard H. Brown.*
27	" " " (*sea area*)	"	5	"	
	" " "	Lingan	10	working.	*Donald Lynk.*
	" " "	.....	4	not working.	
39	" " " (*sea area.*)	.....	5	"	
38	" " " (*sea area.*)	.....	5	"	E. P. Archbold.
4,12.16	Glace Bay Company	Little Glace Bay	3	working.	*Henry Mitchell.*
44,45	Halifax Coal and Iron Company	Ontario	1½	"	*John Sutherland.*
75	Henry, W. A.	.....	1	not working	
22	Ingraham, R. J. & J. L.	.....	1	working	
6,13,18,19	Intercolonial C. & R. Company	International	4	"	R. N. McDonald.
71	Jennings, Edward.	.....	1	not working.	
64,65	Lorway Coal Company	Lorway	2	"	
68	" " "	.....	1	"	
69	" " "	Emery	1	working.	*Albert J. Hill.*
10,21	Matheson, J	.....	2	not working.	
74	Moore & Moseley	.....	1¼	"	
47	McInnes & LeCras	.....	1	"	
52,53	Hugh McLeod	.....	2	"	Edgar Sterling.
49	Glasgow & C. B. (N.S.) C. & R. Co.	Reserve	1	working.	*George Scott.*

LIST OF COAL LEASES IN THE PROVINCE. (*Continued.*)

73	Reid, Thomas S.		1	not working.	
40,41,42	Ross, H. E. et all.	Pt. Aconi	3	"	
14,24	Schooner Pond Coal Company	Schooner Pond	2	"	
43	South Head Company	South Head	1	"	
54 to 63	Sydney Coal Mining Co. (*Sea areas.*)		10	"	
67	Weatherbe & Kirby		1	"	
32	Sword, William (*sea area.*)		3	"	
34,35,36	Victoria Company, (*sea area.*)	Victoria	5	working.	Joseph Salter.
50,51	" " "		2	not working.	
			114		
		INVERNESS COUNTY.			
5	Evans, John Aylmer Freke.	Cape Mabou	2	"	
4	Cape Breton Coal Mining Company.	Port Hood	1	"	
8	Evans, Thomas	Chimney Corney	1	"	
9	" " (*sea area.*)		1	"	
12	McCully, Jona, et al		1	"	
11	Peppett, William J	Broad Cove	1	"	
6,7	Ross, H. E. et al, (*sea area.*)		2	"	
10	Tremain, E. D, (*sea area*)		1	"	
			10		
		RICHMOND COUNTY.			
2	Marmaud, A. E.	Little River	1	"	
		VICTORIA COUNTY.			
2	Campbell, Charles J	New Campbellton	3	working.	Lewis E. Tremain.
3,4	Ross, William		4	"	*A. Henderson.*
			7		
	Total area under lease		197 sq.	miles.	

COAL TRADE BY COUNTIES.

TABLE A.

	Cumberland.		Pictou.		Cape Breton.		Victoria.		Total.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised	Sold.	Raised.	Sold.
1st Quarter - - - - -	11,582	7,363	97,613	19,141	150,433	8,548	883	.....	260,511	35,052
2nd Quarter - - - - -	11,459	10,500	119,172	89,829	123,943	88,956	1,450	864	256,024	190,149
3rd Quarter - - - - -	12,280	17,294	134,572	171,788	84,892	155,308	2,467	2,298	234,211	346,688
4th Quarter - - - - -	16,259	14,442	59,519	77,168	45,000	84,204	1,196	1,424	121,974	177,238
Total - - - - - -	51,580	49,599	410,876	357,926	404,268	337,016	5,996	4,586	872,720	749,127
1873 - - -	27,592	26,345	383,949	333,984	639,085	520,189	841	588	1,051,467	881,106
1872 - - -	15,750	14,153	422,716	388,417	437,326	380,274	5,158	3,070	880,950	785,914

COAL TRADE BY COUNTIES.

TABLE B.

MARKETS.	Cumberland.		Pictou.		Cape Breton.		Victoria.		Total.		Grand.
	Round.	Slack.	Round.	Slack.	Round.	Slack.	Round.	Slack	Round.	Slack.	Total.
Nova Scotia—											
Land Sales	2,296	742	29,457	13,145	6,183	9,823	.....	.....	37,936	23,710	61,646
Seaborne	901	40	55,354	9,041	80,124	5,384	2,439	36	138,818	14,501	153,319
Nova Scotia—Total	3,197	782	84,811	22,186	86,307	15,207	2,439	36	176,754	38,211	214,965
Quebec	.....	.....	114,119	2,069	45,129	333	619	....	159,867	2,402	162,269
New Brunswick	34,128	8,325	7,216	2,681	26 300	191	.....	....	67,644	11,197	78,841
Newfoundland	.....	.....	1.946	84	52.507	144	1,003	12	55,456	240	55,696
P. E. Island	.....	.....	11,985	23,182	6,144	160	477	....	18,606	23,342	41,948
United States	3,167	.....	55,536	5,38[illegible]	65,578	8,671	.....	....	124,281	14,054	138,335
West Indies	.....	.....	21,362	.....	26,482	.....	.....	....	47,844	.....	47,844
South America	.....	.....	4,389	.....	688	.....	.....	.....	5,077	.....	5,077
Europe	.....	.....	977	.....	3,175	.....	.....	....	4,152	.....	4,152
Total	40,492	9,107	302,341	55,585	312,310	24,706	4,538	48	659,681	89,446	749,127
" 1873	23,944	2,401	281,641	52,343	504,281	15,908	488	100	810,353	70,753	881,106
" 1872	13,272	881	340,142	48,275	360,036	20,237	2,879	191	716,329	69,584	785,914

COAL—GENERAL STATEMENT.

1874.	Produce.	Sales.	Colliery Consumption
1st Quarter - - - - - Tons.	260,511	35,052	32,431
2nd " - - - - - "	256,024	190,149	29,082
3rd " - - - - - "	234,211	346,688	29,794
4th " - - - - - "	121,974	177,238	28,275
Total.....1874.	872,720	749,127	119,582
Total.....1873.	1,051,467	881,106	108,398
Total.....1872.	880.950	785,914	101 341

N. B.—Stock on hand at the end of the year, 93,000 Tons.

COAL SALES.

Markets.	1st Quarter	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1874.	1873.
Nova Scotia - -						
" Land sales	14.967	8,363	13,836	24,480	61.646	60,96
" Seaborne -	2,807	35,287	74,389	40,836	153,319	154,33
Total - - -	17,774	43,650	88,225	65,316	214,965	215,29
Quebec - - - -	. . .	61,785	84,138	16,346	162.269	187,05
New Brunswick -	6,761	17,001	30,727	24,352	78,841	68,21
Newfoundland -	693	15,491	24,039	15.473	55,696	55,86
P. E. Island - - -	. . .	11,117	21,067	9,764	41,948	26.84
United States -	5,490	35,480	82,995	14,370	138,335	264,76
West Indies - -	4,334	4,917	13,338	25,255	47.844	54.21
South America -	. . .	. . . .	595	4,482	5,077	1,88
Europe - - - - -	. . . .	708	1,564	1,880	4,152	6,97
Total - - -	35,052	190,149	346,688	177,238	749,127	881,10

COAL PRODUCE OF NOVA SCOTIA DURING THE YEAR ENDED DECEMBER 31st, 1874.

Collieres.	Seams.	Produce.	Sales.			Per Centage	Colliery Consumption.		Per Centage.
			Bearing Royalty.	Free.*	Total.		Engines.	Workmen.	
Cumberland County.		Tons.	Tons.	Tons.	Tons.		Tons.	Tons.	
Lawrence	Joggins	27	15	12	27	100	.....	.....	.....
Scotia	North	1741	1267	58	1325	76	387	20	23
South Joggins	Joggins	16685	16489	945	17434	104	800	142	5
Spring Hill	Black	33127	22721	8092	30813	93	1019	485	4
Pictou County.									
Acadia	Acadia	110734	82421	18437	100858	91	4539	1766	5
Albion Mines	Deep	41188							
	Main	94343	92483	17948	110431	81	18017	5465	17
Intercolonial	Acadia	66545							
	Deep	1524	49747	7466	57213	84	1618	8141	14
Mitchell & Co.	McBean	490	265	15	280	57	.....	24	5
Nova Scotia	Acadia	56953	42220	8865	51085	89	4208	1453	9
Vale	McBean	39099	35205	2854	38059	97	1515	904	6
Cape Breton County.									
Block-house	Block-house	28897	33519	411	33930	117	3200	1904	17
Caledonia	Phelan	39388	32171	2422	34593	87	1328	1065	11
Emery	Emery	22137	13737	3325	17062	77	1182	1010	9
Gardiner	Lorway ?	20196	14615	1025	15640	77	2806	1254	20
Glace Bay	Harbor	31195							
	Hub	12340	39848	1140	40988	88	2516	1805	7
Gowrie	McAulay	32857	27168	7953	35121	106	2790	3280	18
Ingraham	Indian	67	57	.....	57	85	.....	.....	.....
International	Harbor	36385	29546	345	29891	82	1239	1648	8
Lingan	Lingan	19697	12400	853	13253	67	1213	1353	13
Ontario	Phelan	7070	5650	227	5877	83	139	234	5
Reserve	Phelan	28769	19686	5140	24826	86	1538	1818	11
Schooner Pond	Emery	1523	740	644	1384	91	339	248	31
Sydney Mines	Lloyds	8529							
	Main	96958	72282	270	72552	68	23509	7552	19
Victoria	Ross	15310	10891	951	11842	77	1631	1621	21
Victoria County.									
Black Rock	.....	35	85	.....	85	.....	.....	10	28
New Campbellton	.....	5961	4453	48	4501	75	661	186	13
		872720	659681	89446	749127	85	76194	43388	13

* FREE COAL.—Chap. 9, Sec. 106, (*a*). "Slack Coal, that is, Coal that shall have passed through a screen, the bars of which are not wider apart than three-quarters of an inch."

NOTE.—The large stocks on hand at the first of the year account for the high per centage at some Collieries.

COAL SALES IN NOVA SCOTIA FROM 1785 TO 1874, (Inclusive.)

Year.	Sales.	Total.	Year.	Sales.	Total.
1785	1,668		1831	37,170	
1786	2,000		1832	50,396	
1787			1833	64,743	
1788			1834	50,813	
1789	10,681		1835	56,434	
1790			1836	107,593	
			1837	118,942	
		14,349	1838	106,730	
1791	2,670		1839	145,962	
1792	2,143		1840	101,198	839,981
1793	1,926				
1794	4,405		1841	148,298	
1795	5,320		1842	129,708	
1796	5,249		1843	105,161	
1797	6,039		1844	108,482	
1798	5,948		1845	150,674	
1799	8,947		1846	147,506	
1800	8,401		1847	201,650	
		51,048	1848	187,643	
1801	5,775		1849	174,592	
1802	7,769		1850	180,084	1,533,798
1803	6,601				
1804	5,976		1851	153,499	
1805	10,130		1852	189,076	
1806	4,938		1853	217,426	
1807	5,119		1854	234,312	
1808	6,616		1855	238,215	
1809	8,919		1856	253,492	
1810	8,609		1857	294,198	
		70,452	1858	226,725	
1811	8,516		1859	270,293	
1812	9,570		1860	322,593	2,399,820
1813	9,744				
1814	9,866		1861	326,429	
1815	9,336		1862	395,637	
1816	8,619		1863	429,351	
1817	9,284		1864	576,935	
1818	7,920		1865	635,586	
1819	8,692		1866	558,520	
1820	9,980		1867	471,185	
		91,527	1868	453,624	
1821	11,388		1869	511,795	
1822	7,512		1870	568,277	4,927,339
1823					
1824	27,000		1871	596,418	
1825			1872	785,914	
1826	12,600		1873	881,106	
1827	12,149		1874	749,127	
1828	20,967				3,012,565
1829	21,935				
1830	27,269			Total....	13,081,708
		140,820			

SUMMARY.

1785 to 1790	14,349	1831 to 1840	839,981
1791 " 1800	51,048	1841 " 1850	1,533,798
1801 " 1810	70,452	1851 " 1860	2,399,829
1811 " 1820	91,527	1861 " 1870	4,927,339
1821 " 1830	140,820	1871 " 1874	3,012,565

NOTE.—Tables purporting to show the total quantity of coal produced in Nova Scotia have been from time to time published, but in all errors of greater or less magnitude have crept in as the different valuations given to the chaldron in the several sections of the country have been overlooked. The above table is probably as nearly correct as can now be determined and if 13 per cent. be allowed for colliery consumption 1,700,-622 tons must be added making the total quantity actually raised 14,782,330 tons.

PORT OF HALIFAX.

Exports of Minerals :—

	Tons.	1874. Value.
Coal	7,615	$30,963.00
Plaster	330	594.00
	7,945	$31,55 .00

Imports of Coal :—

	1870.	1871.	1872.	1873.	1874.
Anthracite, (United States)	1024	1577	3715	5605	4494
Gas Coal	934	240	. . .	. . .	1131
Cumberland	. .	. .	. .	. .	503

PORT OF ST. JOHN'S.

Imports of Coal :—

	1873.	1874.
United Kingdom	7,075	7,732
Nova Scotia	40,220	29,863
United States	348	268
Total in Tons	47,643	37,865

COAL EXPORTED FROM N. S. TO NEW YORK.—1874.

Pictou	3,269
Sydney	1,488
Glace Bay	667
Port Caledonia	21,230
Blockhouse' Cow Bay	12,103
Total	38,757

COAL SEABORNE, 1874.

By 408 Steamers	160,838
" 2770 Sailing Vessels	503,841
	664,679

STATEMENT OF THE NUMBER AND CLASSES OF PERSONS EMPLOYED, AND AVERAGE RESULTS AT EACH COLLIERY DURING THE YEAR ENDED 31st DECEMBER, 1874.

COLLIERY.	Underground.				Surface.				Construction.		Total.		Avg No. of days per person.		Average No. of Tons per cutter.	Av'ge. tons per day per cutter.	Av'g quantity raised per day—Tons.	Horses.		Pits Worked.
	Cut's.	Laborers.	Boys.	Days labor.	Mechanics.	Laborers.	Boys.	Days labor.	Pers's	Days labor.	Pers's	Days labor	Undr gr'nd	Surface.				above	below	days.
Black, Cumberland.	..	....	....	....	....	6	....	156	....	....	6	156	....	26	....	....	....	....	....	....
Lawrence	1	....	1	24		....	....	....	....	....	2	24	12	....	27	2.2	2	....	....	12
New Dominion	....	....	....	....	....	....	....	....	2	284	2	284	....	....	....	....	....	....	....	....
Scotia	5	2	1	1262	1	4	1	1257	....	....	14	2519	158	210	348	2.0	12	....	....	143
South Joggins	29	6	8	10485	8	10	3	5391	13	747	77	16623	244	257	575	2.3	73	7	6	226
Spring Hill	43	18	3	18165	15	30	4	13915	10	2496	123	34576	284	284	770	2.7	128	3	2	258
S. H'll & Parrsboro C. & R. Co.	....	....		....	4	3	....	370	1	8	8	378	....	53	....	....	....	....	....	....
Acadia, Pictou.	163	69	21	55685	30	94	8	36265	....	....	385	91951	220	274	679	3.1	485	15	5	228
Albion Mines	258	68	61	80526	61	124	36	58469	....	....	608	139095	208	265	525	2.5	D 171 M 399	21	28	D 240 M 236
Intercolonial	95	42	11	27109	25	44	21	27096	17	5039	255	59244	183	301	727	3 9	233	7	3	285
Mitchell & Co	4	....	1	375	1	2	1	257	....	....	9	632	75	64	94	1.6	6	1	....	86
Nova Scotia	71	23	16	31088	19	46	10	21569	....	....	185	52657	282	287	802	2.8	217	5	5	262
Vale	108	29	5	30485	30	32	2	10194	89	16955	295	57624	214	159	362	1 6	165	3	....	236
Block-house, Cape Breton.	68	10	23	15079	26	70	6	19374	16	5779	219	49232	139	190	425	2.8	112	9	24	145
Caledonia	51	7	12	14945	11	31	5	10447	10	2476	127	27868	213	222	771	3.6	234	8	14	149
Collins	1	1	....	8	1	1	....	12	..		4	20	4	6	....	....	....	....	....	....
Emery	41	8	4	14257	21	63	5	11645	14	4333	156	30235	268	130	539	2.0	163	6	3	135
Gardiner	45	10	4	17275	10	16	2	6714	3	437	90	24426	293	240	449	1.5	119	4	2	169
Glace Bay	88	6	25	22197	29	25	3	13467	39	10513	215	46177	186	236	529	2.8	Hr139 Hb156	12	17	Hr243 Hb 79
Gowrie	76	10	18	20468	25	32	13	15775	16	3978	190	40221	195	225	432	2.2	192	7	19	171
Ingraham	2	1	1	105	1	....	1	45	4	53	10	203	26	22	33	....	....	1	....	....
International	46	14	11	17602	19	29	4	15774	....	....	123	33376	248	303	791	3 2	197	14	15	185
Lingan	48	11	18	15548	10	31	9	11329	19	2336	146	29213	202	226	410	2 0	129	10	10	153
Ontario	23	2	2	4316	2	12	2	2996	....	....	43	7312	152	125	307	1.9	43	2	1	163
Reserve	53	9	12	13206	11	69	13	13618	....	....	167	26824	178	146	542	3.0	276	9	6	104
Schooner Pond	....	3	3	324	3	31	2	1664	....	....	42	1988	54	50	...	....		2	....	....
Sydney Mines	192	52	78	76904	61	93	28	53165	91	31679	595	161748	232	292	549	2 3	Ll 38 M 383	26	60	Ll 243 M 253
Victoria	30	13	4	9381	15	9	5	7940	5	630	81	17951	199	274	510	2.5	176	2	1	87
Black Rock Victoria	2	1	2	133	2	2	1	35	..	17	10	185	26	7	17	0.6	....	....	....	27
	20	12	4	6266	12	11	8	1563	6	541	95	11970	120	131	157	1.2	21	5		283

COLLIERY CONSTRUCTION ACCOUNT.

COLLIERY.	Shafts.	Slopes.	Adits.	Machinery.	Colliery Build'gs	Dwellings.	Surface Works.	Railways.	Wharv's	Prospecting.	TOTAL.
Black, Cumberland Co.	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	1005 00	$1005 00
New Dominion	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	250 00	250 00
Scotia	... ...	80 00	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	80 00
South Joggins	... ...	... ...	... ...	858 00	261 00	240 00	... ...	... ...	650 00	... ...	2009 00
Spring Hill	... ...	8023 47	2045 00	9200 00	1050 00	2500 00	5079 43	548 00	... ...	... ...	28445 90
Spring Hill & Parrsboro C. & R Co.	... ...	158 89	... ...	... ...	604 00	393 49	1157 93	1024 00	... ...	1666 60	5007 91
Acadia, Pictou Co.	... ...	... ...	... ...	5613 89	1477 45	6324 03	1526 60	622 14	49 93	32 20	15646 24
Albion Mines	... ...	... ...	... ...	4211 52	6762 28	... ...	2898 08	606 89	... ...	... ...	14478 77
Intercolonial	161 88	8309 20	883 79	6191 57	1370 81	2221 44	417 58	... ...	... ...	... ...	19556 27
Mitchell & Co.	... ...	... ...	... ...	... ...	9 00	76 00	... ...	... ...	... ...	... ...	85 00
Nova Scotia	... ...	1130 00	307 00	1774 00	2737 00	... ...	188 00	1146 00	281 00	451 00	8014 00
Vale	... ...	1200 00	648 00	5200 00	... ...	8403 00	1284 00	21691 00	4374 00	... ...	42800 00
Block House, Cape Breton Co.	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	16795 86	... ...	16795 86
Caledonia	... ...	... ...	1447 05	1520 24	... ...	3188 63	706 70	... ...	... ...	... ...	6862 62
Emery	265 06	704 40	321 50	... ...	182 20	75 00	700 45	... ...	... ...	112 25	2360 86
Gardiner	1780 00	... ...	350 00	180 35	95 60	300 00	... ...	... ...	... ...	... ...	2705 95
Glace Bay	16324 54	... ...	185 63	300 00	2594 92	... ...	... ...	2524 63	... ...	... ...	21929 72
Gowrie	186 00	40 00	140 00	... ...	2060 00	600 00	510 00	1950 00	6300 00	... ...	11786 00
Ingraham	75 00	... ...	85 00	35 00	... ...	... ...	... ...	... ...	... ...	... ...	195 00
International	... ...	716 50	21 25	... ...	... ...	... ...	... ...	... ...	245 08	... ...	982 83
Lingan	... ...	803 00	2356 37	... ...	952 09	6000 00	... ...	450 00	131 00	... ...	10692 46
Ontario	... ...	... ...	253 00	109 00	63 00	22 00	... ...	... ...	... ...	... ...	447 00
Reserve	... ...	1122 30	... ...	286 00	... ...	82 40	323 60	... ...	... ...	... ...	1814 30
Schooner Pond	129 40	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	129 40
Sydney Company	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	16 00	16 00
Sydney Mines	14653 81	... ...	... ...	41 39	... ...	1074 91	... ...	8182 45	4906 76	... ...	28859 32
Victoria	... ...	345 00	787 00	600 00	... ...	... ...	... ...	... ...	75 00	... ...	1807 00
Black Rock, Victoria Co.	... ...	... ...	12 00	20 00	... ...	... ...	32 65	... ...	40 00	... ...	104 65
New Campbellton	... ...	1193 00	32 00	... ...	466 00	281 00	141 00	184 00	156 00	209 00	2662 00
	33575 69	23825 76	9874 59	36140 96	20685 35	31784 90	14966 02	38929 11	34004 63	3742 05	247529 06

EXTRACT.

CUSTOM HOUSE REPORTS.

COAL AND COKE.

Imports, 1873-'74.	Tons.	Value.
Great Britain	133,603	$724,012
United States	671,224	3,081,341
	804,827	3,805,353
Exports, 1873-'74.		
Great Britain	331	1980
United States	316,423	1,054,467
Other Countries	101,603	287,292
	418,357	1,343,739

NOTE.—During the year 1874 Nova Scotia sent only 138,335 tons to the United States.

IRON ORE ANALYSES.

	Londonderry.		Ankerite.		Pictou—Spathic Sutherland's River.	
	White.	Yellow.	Brown.			
Carbonate of Iron	2.32	23.45	20.30	18.59	88.59	88.48
Carbonate of Lime	5.40	43.80	49.20	51.61	1.53	2.34
Carbonate of Mang'se	.. ..	.80	.. ..	.. ..	2.85	1.85
Carbonate of Magnesia	2.20	30.80	30.20	28.67	3.48	5.82
Silicia	.5	.10	.. ..	.13	2.70	1.51
Sulphate of Lime	... ...	.. ..	.. ..	.. ..	.55	.....
	99.70	98.95	99.70	99.93	99.70	100.00

ANALYSES OF IRON ORES OF NOVA SCOTIA.

CONSTITUENTS.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII	XIX.	XX	XXI.	XXII.	XXIII.
des of Iron.....	75.67	65.26	52.30	69.71	92.01	97.52	85.01	81.99	88.92	93.09	84.54	84.73	69 86	83.79	83.29	82.65	81.78	83.13	79.68	96 93	88.21	50.14	69.17
" " Manganese.	.52	trace.	15	.18	2.16	.....	.38	.06	.78	1.10	.76	.23	2.25	2.05	.41	.25	.21	72	2.51	trace.	.....	24.74	undd
mina	.45	5.59	undd	undd	.21	.....	.69	1.02	.71	.....	.19	.23	trace.	1.16	trace.	.56	86	.66	.63	.33	.....	3.68	undd
ne.....	2.44	1.88	undd	undd	1.27	.....	.49	.32	1.44	.91	.....	.14	11.70	.52	.39	.15	.52	.88	.57	.04	.....	.35	undd
gnesia	.98	1.05	undd	undd	.43	.....	.19	.05	.82	.....	.43	.14	.42	.62	.25	.10	.12	.25	.34	.11	1.22	4.76	undd
ca	19.43	23.68	undd	29 97	3.68	3.20	2.14	5.84	2.14	4.80	2.22	2.67	.07	.52	4.13	4.79	5.37	1 93	3 05	1.26	9.04	4.81	18.94
n Pyrites.....	.....	.....	undd	undd	.....	.06	.....	.....	.....	.04	undd	.....	.....	.75	.02	.....	trace.	.....	.....	.....	.....	.20	.....
lphur)	.29	.....	.31	.09	.16	(.003)	.05	.04	.21	.002	.....	.004	.016	(.04)	(.001)	(.008)	.....	.016	(.004)	.....	trace.	(.98)	(.65)
osphoric Acid.....	.22	.....	.19	.63	.08	.....	trace.	.99	.34	.....	.....	.19	.....	tracc.	.32	38	.14	.86	.44	.007	.....	.21	1.82
osphorus).....	(.10)	.....	(.08)	(.26)	(04)	.....	.....	(.43)	(.14)	.....	.....	(.08)	.....	.....	(13)	(.166)	(06)	(.37)	(.19)	(.003)	trace.	(.09)	(.79)
ter.....	.....	.....	1.98	undd	.....	.....	11.13	9.46	4.61	.....	11.41	11.40	7.07	11.25	11.21	19.82	10.68	11 53	12.43	.82	1.53	11 06	.....
s on Ignition	.....	2.54	.....	.....	.....	.....	.....	.25	.....	.....	.45	.....	9.20	.....	.....	.....	.....	.....	.....	.....	.....	.05	.....
	100.00	100.00	.....	.....	100.00	100.78	100.08	99.93	100.00	99.94	100 00	99.74	[illegible]	99.98	100.00	99.72	99.68	99.98	99.66	99.49	100.00	100 00	.....
talic Iron.....	54.36	43.4	33.61	42 50	64.41	68.33	59.50	57.71	62.24	65.2	59.17	59.31	48.92	58.68	58.30	57.85	57.25	58.27	55.17	67.85	61.39	35.10	50.09

Pictou County.

I. II.—Red Hematite, East River.
III.— " " Webster Vein.
IV.— " " Blanchard Vein.
V. VI.—Specular Ore, McDonald's East River.
VII, IX, X, XI.—Limonite, Fraser Saddlers', East River.
VIII.—Limonite, Cullen's, East River.

Colchester County.

XII.—Limonite, Ross' Farm, Londonderry.
XIII.— " P. Totten's, "
XIV.— " Folly Mountain, "
XV, XVI. " Martin's Brook, "
XVII.— " Cumberland Br. "
XVIII.— " " " North Vein, Londonderry.

XIX.—Limonite, Cumberland Brook, South Vein, Londonderry.
XX.—Specular, Cook's Brook, Londonderry.
XXI.—Red Hematite, Big Pond Cape Breton.
XXII.—Limonite, Goshen Hills, Hants Co.
XXIII.—Nictaux Ore.

GOLD

STATEMENT shewing the average daily labour employed, the amount of Quartz crushed, "the yield of Gold per ton of Quartz," the Quantities of Gold from Alluvial Mines. the yield of Gold, the maximum yield per ton in each District, and in the whole Province, and the value of the average yield of Gold per man employed tn mining for the Twelve Months ended December 31st, 1874.

DISTRICT.	Average men employed.	Crushing Mills employed.	Steam Power.	Water Power.	Quartz, &c., crushed.	Yield per ton.	Gold from Alluvial Mines.	Total yield of Gold.	Maximum yield per ton.	Average yield per man for Twelve Months at $18.00 per oz.
Stormont	6	1	....	1	236	0 14 5	.....	167 19 20	1 11 15	$503 96
Wine Harbour	18	2	1	1	1193	0 10 14	.....	633 11 6	5 0 0	633 60
Sherbrooke	98	3	2	1	5430	0 14 20	.....	4037 1 2	4 5 6	741 49
Tangier	17	2	.....	2	706	0 11 21	.....	419 7 5	2 7 1	444 01
Montagu	17	2	2	.....	496	1 6 10	.....	655 0 22	19 12 22	693 53
Waverley	40	2	1	1	1682	0 18 11	.....	1553 12 15	7 0 0	699 13
Oldham	11	2	.....	2	527	1 5 6	.....	665 8 11	18 11 16	1088 83
Renfrew	1	1	.....	1	10	0 6 7	.....	3 3 7	0 6 8	56 95
Uniacke	1	1	1	.....	19	0 14 19	.....	14 1 0	0 16 0	252 90
Caribou	14	2	2	.....	333	1 2 3	.....	368 10 23	1 9 23	473 90
Gays River	10	1	1	.....	2979	0 3 3	.....	466 14 14	0 4 10	840 11
Unproclaimed, &c	13	2	1	1	233	0 13 9	.....	156 2 4	0 17 12	216 14
Total	246	21	11	10	13844	0 13 5	.....	9140 13 9	19 12 22	664 76

No. 1.

Statement shewing the number of Men employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	STORMONT.					WINE HARBOUR.					SHERBROOKE.					TANGIER.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	O	Dwts.	Grs.
January	.....	.....	.....	..	..	41	203	159	2	9	104	169	145	1	6	12	16	4	10	17
February	.....	.....	.....	..	..	31	131	79	12	.....	93	134	192	11	...	10	61	28	12	18
March	.....	.....	.....	..	..	52	116	62	18	...	93	304	260	12	...	15	55	19	18	12
April	.....	.....	.....	..	..	15	30	24	8	...	61	452	475	13	...	12	47	22	7	..
May	4	.....	.....	..	..	14	60	28	5	12	93	557	353	18	18	12	50	37	19	18
June	6	.....	.....	..	..	25	124	44	9	10	99	457	242	4	6	16	35	57	12	18
July	11	28	10	8	..	12	72	22	15	2	98	456	240	18	15	25	82	66	6	..
August	4	.....	.....	..	..	9	125	39	19	14	97	497	343	8	...	20	56	39	13	6
September	12	21	21	2	..	5	80	86	18	...	97	396	304	17	5	11	62	31	16	..
October	10	117	94	8	20	2	64	33	11	9	111	733	439	2	...	22	88	38	2	..
November	10	70	42	1	..	2	20	10	12	10	115	605	460	14	...	29	102	48	8	12
December	12	.....	.....	..	..	10	168	40	19	12	115	670	578	1	...	26	52	24	..	..
Total	6	236	167	19	20	18	1193	633	11	6	98	5430	4037	1	2	17	706	419	7	5

No. 2.

Statement shewing the number of Men employed, Quartz crushed, and Gold obtained each Month in each District.

MONTH.	MONTAGU.					WAVERLEY.					OLDHAM.					RENFREW.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January . . .	25	26	70	10	..	50	212	87	19	15	19	45	41	3	15	.....	.....	.....	..	..
February . . .	21	25	47	11	..	33	174	82	16		10	23	60	2	9	.....	.....	.....	...	..
March	25	20	36	12	..	38	140	56	16	..	6	15	4	14	13	.....	.....	.....	..	..
April	21	44	82	16	..	29	216	106	17	..	6	21	66	15	11	.....	.....	...	..	..
May	24	31	74	..	..	22	115	103	7	..	8	121	60	10	..	.....	.....	.....	...	..
June	26	23	52	12	..	38	143	188	6	..	10	84	14	4	7	.....	.....	.....	..	..
July	18	21	52	..	..	39	82	123	9	...	7	25	56	7	7	.....	.....	.....	..	..
August . . .	5	24	90	2	..	42	121	238	19	..	5	11	44	..	18	.....	.....	.....	..	..
September . . .	6	57	48	8	19	42	64	72	17	..	10	14	30	7	16	7	10	3	3	7
October . . .	13	145	39	13	22	49	146	133	..	..	20	113	185	9	11	1	....	.....	...	..
November . . .	12	55	47	0	5	54	100	196	1	..	20	28	50	10	18	.....	....	.....	..	..
December . .	12	25	13	15	..	46	169	163	5	..	15	27	51	2	6	.....	.....	.....	..	..
	17	496	655	0	22	40	1682	1553	12	15	11	527	665	8	11	1	10	3	3	7

No. 3.

Statement shewing the number of Men employed, Quartz crushed, and Gold obtained in each Month in each District.

MONTH.	UNIACKE.					CARIBOU.					GAY'S RIVER.					UNPROCLAIMED, &C.				
	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.	Men.	Tons.	Oz.	Dwts.	Grs.
January	.....	.....	.....	..	..	.....	.....	.....	..	..	12	350	36	..	..	22	.....	.....	..	..
February	.....	.....	.....	..	..	.....	.....	.....	..	..	10	280	24	10	..	22	38	29	12	..
March	.....	.....	.....	..	..	.....	.....	.....	..	..	9	200	20	..	..	21	.....	.....	..	..
April	.....	.....	.....	..	..	.....	.....	.....	..	..	12	130	27	8	..	22	40	23	5	..
May	.....	.....	.....	..	..	5	.....	.....	..	..	9	200	37	10	..	27	30	24	12	..
June	.....	.....	.....	..	..	12	.....	.....	..	..	11	260	40	..	..	24	84	51	6	12
July	1	10	6	17	..	20	.....	.....	..	..	9	250	50	14	..	7	.....	..	..	..
August	1	9	7	4	..	23	54	69	13	12	10	260	49	8	..	7	.....	...	..	..
September	.....	.....	.....	..	..	26	67	80	17	6	9	240	53	8	..	7	41	27	6	16
October	.....	.....	.....	..	..	29	50	49	9	12	9	260	43	9	..	.....	.....	.....	..	..
November	.....	.....	.....	..	..	31	59	59	17	7	11	273	50	4	14	.....	.....	.....	..	..
December	.....	.....	.....	..	..	28	103	108	13	10	10	276	34	3	...	.....	.....	.....	..	..
	1	19	14	1	..	14	333	368	10	23	10	2979	466	14	14	13	233	156	2	4

FINANCIAL STATEMENT—GOLD.

Mines Department for 12 *Months ended December* 31*st* 1874.

RECEIPTS.				EXPENDITURE.				
DISTRICTS.	Rents.	Royalty.	Totals.	Salaries, Surveys, &c.	Return of Rents.	Return of Royalty.	Royalty Commission.	Totals.
Caribou	120 00	74 73	194 73	.....	.....	.....	.....	.....
Fifteen Mile Stream	42 00	14 37	56 37	.....	.....	.....	.....	.....
Gay's River	18 00	162 62	180 62	.....	2 00	.....	7 34	9 34
Montagu	190 00	265 46	455 46	.....	.....	.....	15 47	15 47
Oldham	112 00	362 51	474 51	276 00	8 00	.....	14 91	298 91
Ovens	32 00	.....	32 00	.....	.....	.....	.....	.....
Renfrew	298 00	119 89	417 89	145 50	.....	.....	.....	145 50
Sherbrooke	128 00	1354 26	1482 26	720 00	32 00	.....	66 05	818 05
Stormont	360 00	58 10	418 10	322 00	40 00	.....	.....	362 00
Tangier	58 00	75 35	133 35	12 60	.....	.....	2 39	14 99
Uniacke	24 00	8 60	32 60	3 06	.....	.....	.....	3 06
Wagamatkook	4 00	.....	4 00	.....	.....	.....	.....	.....
Waverley	22 00	553 12	575 12	.....	.....	67 29	10 60	77 89
Wine Harbour	378 00	234 70	612 70	429 30	.....	.....	14 77	444 07
Prospecting Licenses	.....	.....	615 73	.....	.....	.....	.....	(return) 2 00
	1786 00	3283 71	5685 44	1908 46	82 00	67 29	131 53	2191 28

OTHER THAN GOLD

Department of Mines for the 12 Months ended December 31st, 1874.

COUNTIES.	RECEIPTS.				EXPENDITURE.		
	Licenses to Search.	Licenses to Work.	Royalty.	Totals.	Return Liceses to Search.	Surveys.	Totals.
Antigonish	140 00	.....	.....	140 00	.....	.....	.....
Cape Breton	1100 00	425 00	40099 45	41624 45	59 47	100 00	159 47
Colchester	700 00	50 00	.....	750 00	20 00	.....	20 00
Cumberland	1020 00	1450 00	3504 43	5974 43	60 00	.....	60 00
Digby	20 00	.....	.....	20 00	.....	.....	.....
Guysboro'	40 00	.....	.....	40 00	.....	.....	.....
Halifax	20 00	50 00	.....	70 00	.....	.....	.....
Hants	180 00	.....	.....	180 00	.....	.....	.....
Inverness	360 00	50 00	.....	410 00	40 00	.....	40 00
Lunenburg	40 00	.....	.....	40 00	.....	.....	.....
Pictou	820 00	650 00	33750 15	35220 15	60 00	.....	60 00
Richmond	300 00	100 00	.....	400 00	.....	.....	.....
Victoria	140 00	50 00	.....	190 00	20 00	.....	20 00
	4880 00	2825 00	77354 03	85059 03	259 47	100 00	359 47

ABSTRACT ACCOUNT..

RECEIPTS and EXPENDITURE for the Twelve Months, ended 31st December, 1874.

RECEIPTS.			EXPENDITURE.		
Licenses to Search Coal.....	$4880 00		Return Licenses to search, Coal	$259 47	
" " Work "	2825 00		Surveys "	100 00	359 47
Royalty "	77,354 03				
		85,059 03	Salaries and Surveys, Gold	1908 46	
			Royalty Commission "	131 53	
Rents.....Gold	1786 00		Return Rents. "	82 00	
Royalty..... "	3283 71		" Royalty "	67 29	
Prospecting Licenses "	615 73	5,685 44	" Prospecting Licenses "	2 00	2191 28
			General Expenses	3795 50	
			Postage.....	113 47	
			Stationery and Printing.....	2587 15	
					6496 12
		$90,744 47			$9046 87

ERRATA.

PAGE.

4. Line 13. *For* uncertainity *read* uncertainty.
5. " 26. Strike out 'not,' and read 'unwise to overlook.'
13. " 13. Insert to read,—'quickly left.'
16. " 29. *For* helps, *read* help.
18. " last but one. *For* speciment, *read* specimen.
27. " 16. *For* wheels, *read* wheel;
" " 23. Transpose, and read SOUTH JOGGINS.
29. " 16. Insert, to read 'upper 9 feet of the seam.'
31. " 16. *For* boards, *read* bords.
33. " 19. *For* as, *read* at.
" " 20. *For* facilitie, *read* facility.
36. " last but two. *For* draw, *read* drum.
41. " 6. *For* likehood *read* likelihood.
45. " last but three. *Before* do so, *insert* to.
46. " 33. Insert 'has,' and read The lead has numerous.
49. " 30. Transpose to read, of the royalty on.
51. " 22. Insert 'of,' and read: as that of limonite.
52. " 19. *For* extend, *read* extends.
" " 21. " extends " extend.
" " 23. " puts " put.
53. " 14. " mountains " mountain.
" " 26. " possesses " possess.
54. " 32. Alter to read: Then the combined gases passing from the furnace by similar passages into and through the remaining pair.
55. " 3. *For* current *read* currents.'
62. " 2. " such was " each was.
68. Raise the three last names in the last column, one line.
69. Straighten the lines under CAPE BRETON COUNTY.
80. In one analyses, for silicia, *read* silica; and in the analysis of white ankerite, for 2.32, 5.4, 2.2, read 23.2, 54.0, 22.0; and in the fourth analysis, for 28.67, read 28.60.